CENTRAL PIEDMONT COMMUNITY COLLEGE

GENERAL CATALOGUE

1965 - 1966

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CENTRAL PIEDMONT COMMUNITY COLLEGE

General Catalog
1965-1966

1141 Elizabeth Avenue
P. O. Box 4009
Charlotte, North Carolina 28204

Students having questions not answered in this publication may obtain further information from the Student Services Office, Central Piedmont Community College, 1141 Elizabeth Avenue, P. O. Box 4009, Charlotte, North Carolina 28204.

Central Piedmont Community College is a comprehensive public community college operating under the North Carolina Department of Community Colleges. The College is a member of the American Association of Junior Colleges.

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ADMINISTRATION AND FACULTY

Board of Trustees

Moses S. Belton
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Administrative Officers of the College

Richard H. Hagemeyer, President

Frederick Robert Struthers, Dean of Instruction

Robert Gilman Hoelzel, Comptroller

James Alexander Kiser, Jr., Associate Dean of Student Services

Dean Brady Davis, Associate Dean of Vocational-Technical Programs

Noah Gayle Simmons, Associate Dean of College Transfer Programs

John Levi Sauder, Associate Dean of Adult Education

Faculty

James Franklin Alexander (1957), Student Personnel Counselor
B.S., 1951 (Johnson C. Smith University); M.S., 1963 (Agricultural and Technical College of North Carolina)

Myra Adelaide Barron (1962), Librarian
A.B., 1930 (Winthrop College); M.A., 1951 (Peabody College). Additional graduate work at Clemson University and Appalachian State Teachers College.

Hunter Wilson Blake (1964), Drafting and Design
B.A., 1952 (Champlain College)

Hoyle Lee Blalock, Jr. (1963), Data Processing Technology
B.S., 1961 (North Carolina State University). Graduate work at North Carolina State University.

John Graham Bradley (1963), Machine Shop, Manufacturing Engineering Technology
Undergraduate work at Western Maryland College, George Washington University, and Charlotte College.

Thomas Graydon Brady, Jr. (1965), Programmed Materials Laboratory
A.B., 1963 (Elon College)

Herbert Burns (1965), Executive Secretarial Program
B.S., 1964 (Appalachian State Teachers College). Graduate work at Appalachian State Teachers College.

Patricia Broadway Caldwell (1965), Associate Degree Nursing Program
B.S., 1959 (Duke University)

Edwin Worth Campbell, Jr. (1964), Chemistry, Mathematics
B.S., 1953 (Appalachian State Teachers College); M.A.T., 1958 (University of North Carolina). Additional graduate work at North Carolina State University and University of North Carolina at Chapel Hill.

Lemuel Hooker Cannon, Jr., P.E. (1963), Drafting and Design Technology
B.M.E., 1947 (North Carolina State University)

Fred Arnold Cardell (1963), Automotive Mechanics
B.S., 1955, Education; B.S., 1958, Mathematics and Chemistry (Western Carolina College). Graduate work at North Carolina State University.

Jane Lindsay Carriker (1958), Practical Nursing
Diploma, 1942 (Montreat Junior College); R.N., 1945 (Presbyterian Hospital School of Nursing). Graduate work at North Carolina State University and University of North Carolina at Chapel Hill.

Thomas Burgess Carroll (1964), Student Personnel Counselor
B.S., 1961, M.A., 1963 (East Carolina College)

Juan Felix Celecia (1964), Biological Sciences
Bachiller, 1952 (De LaSalle College, Buenos Aires); B.S., 1958 (University of Buenos Aires); M.S., 1961, Ph.D., 1964 (University of Georgia)

William Edward Cheek (1965), Chemistry
B.S., 1953, M.A., 1957 (Appalachian State Teachers College); M.A., 1962 (George Peabody College)

Nancy Carolyn Cheshire (1965), Associate Degree Nursing Program
B.S.N., 1959 (Duke University); M.S., 1963 (University of Maryland)

Garland Myers Dagenhart, Jr. (1965), Mathematics
B.S., 1964 (North Carolina State University); M.A., 1965 (Appalachian State Teachers College)

Karen Daugherty (1965), History, Geography
B.S., 1963, M.A., 1965 (Appalachian State Teachers College)

Dean Brady Davis (1962), Associate Dean of Vocational-Technical Programs
B.Ed., 1941 (Eastern Illinois State Teachers College); M.S., 1950 (North Carolina State University)

Lewis Fisher Drum (1961), Chemistry, Applied Mathematics
B.S., 1938 (Lenoir Rhyne College); B.Ch.E., 1939, M.S., 1941 (North Carolina State University). Additional graduate work at Appalachian State Teachers College and North Carolina State University.

Alois George Farkas (1963), Construction Engineering Technology
B.S.C.E., 1948, M.S.C.E., 1959 (Washington University). Additional graduate work at Duke University and North Carolina State University.

Bernice Poole Fulson (1964), Practical Nursing
R.N., 1952 (Kate Bitting Reynolds Memorial); B.S., 1964 (Queens College)

Robert Curtis Fussell, Jr. (1960), Electrical and Electronics Technology
Associate in Engineering Electronics, 1957 (Valparaiso Technical Institute). Additional undergraduate work at Charlotte College and North Carolina State University.

Eleanor Willoughby Garrett (1963), Executive Secretarial Program
A.B., 1937 (Bowling Green College of Commerce). Graduate work at University of Kentucky and University of North Carolina at Chapel Hill.

Dorothy Gove Glover (1961), Practical Nursing
R.N., 1941 (Mercy College of Nursing). Additional undergraduate work at University of Michigan, University of Georgia, and North Carolina State University.

Robert Lyle Gossett (1965), Anatomy and Physiology for Health Occupations
B.S., 1950 (University of Dayton). Graduate Certificate at Frank E. Bunts Educational Institute.

Thomas Edward Griffin (1965), English
B.S., 1952 (Western Carolina College); M.A., 1964 (Appalachian State Teachers College)

Ronald Corbin Gyles, P.E. (1963), Electrical and Electronics Technology.
B.E.E., 1943, B.S., 1950, M.I.A., 1956 (North Carolina State University)

Richard H. Hagemeyer (1962), President
B.S., 1939 (Bowling Green State University); M.A., 1951 (University of Michigan); Ed.D., 1961 (Wayne State University)

Gayle Melton Hartley (1965), English
A.A., 1958 (Wingate Junior College); A.B., 1960, M.Ed., 1962 (University of North Carolina at Chapel Hill)

Willmore Browning Hastings (1961), Head of Business Programs
B.S., 1932 (University of Illinois); M.A., 1961 (Southern Illinois University)

Jane Elliott Heedick (1961, Practical Nursing
R.N., 1943 (Presbyterian Hospital School of Nursing). Additional undergraduate work at North Carolina State University and Queens College.

Robert Gilman Hoelzel (1964), Comptroller
A.B., 1950 (Harvard). Graduate work at University of Michigan.

Owen Heller Hoke (1965), Data Processing Technology
B.S., 1947 (Franklin and Marshall College); M.A., 1950 (University of North Carolina at Chapel Hill). Additional graduate work at University of Georgia.

Betty Bray Holmes (1964), Dental Assistant Program
C.D.A., 1963 (American Dental Assistant Association). Undergraduate work at William and Mary College and Oklahoma A.&M.

Claud Caldwell Hunter (1960), Automotive Mechanics
Undergraduate work at North Carolina State University.

David Lee Hunter (1957), Mathematics
B.S., 1957 (Johnson C. Smith University); M.S., 1965 (Atlanta University)

Dora Threatt Johnson (1964), Executive Secretarial Program
B.S., 1957 (North Carolina A.&T. College); M.A., 1960 (Columbia University Teachers College). Additional graduate work at University of North Carolina at Greensboro.

Jack Doyle Jones (1965), Biology
B.S., 1958 (Emory University); M.A., 1963 (George Peabody College)

James Alexander Kiser, Jr. (1960), Associate Dean of Student Services
A.B., 1952 (Lenoir Rhyne College); M.Ed., 1953 (University of North Carolina at Chapel Hill). Additional graduate work at University of North Carolina at Chapel Hill and North Carolina State University.

Jessie Propst Kiser (1965), Head of Nursing Programs
B.S.N.E., 1957 (Duke University); M.S., 1962 (University of North Carolina at Chapel Hill.

Laura Strunk Leslie (1964), English
A.B., 1929 (Florida State College for Women); M.A., 1949 (Florida State University). Additional graduate work at Florida State University.

Walter Thompson McFall (1965), Head of Dental Programs
D.D.S., 1923 (Emory University); F.I.C.D., 1935 (International College of Dentistry, Minneapolis, Minnesota). Graduate work at Northwestern University, University of Tennessee, and University of North Carolina.

William Alexander McIntosh (1962), Data Processing Technology
A.B., 1960 (Elon College); M.S., 1964 (North Carolina State University)

Robert Alexander MacRae (1965), Physics
B.S., 1958 (Davidson College); M.S., 1960 (Vanderbilt University)

Raymond Via Mason (1961), Auto Body Repair, Auto Mechanics
Undergraduate work at North Carolina State University.

Manuel Matthew Menser (1961), Welding
Undergraduate work at North Carolina State University.

Charles Therman Milam (1962), Air Conditioning, Heating, and Refrigeration
Undergraduate work at North Carolina State University.

Clinton Price Moody (1962), Commercial Art and Advertising Design
B.S., 1953 (Livingston State College); M.Ed., 1959 (University of South Carolina). Additional graduate work at University of Alabama and University of Wisconsin.

John Deal Morrow (1961), Applied Physics
B.S., 1957 (East Carolina College). Graduate work at North Carolina State University.

Robert Stanley O'Dell (1963), Drafting and Design Technology
B.S., 1951 (East Tennessee State College); M.A., 1959 (East Tennessee State University). Additional graduate work at University of North Carolina at Chapel Hill and North Carolina State University.

Arnold Marion Propst (1962), English for Technical Programs
B.A., 1951 (Duke University). Graduate work at Strayer College and Lenoir-Rhyne College.

Karl William Reber (1963), Metallurgy
B.Ch.E., 1947 (University of Detroit); M.S.E., 1951 (University of Florida). Additional graduate work at University of Tennessee and North Carolina State University.

Eugene Neil Reuben (1963), Commercial Art and Advertising Design
Undergraduate work at Cooper School of Art, Cleveland Institute of Art, and Hayhurst School of Art.

Perry Alfred Rhodes (1964), Business Administration
B.Sc., 1952, M.B.A., 1954 (University of Southern California)

James Howard Sasser (1963), History, Economics
A.B., 1959 (High Point College); M.A., 1960 (George Peabody College for Teachers). Additional graduate work at University of North Carolina at Chapel Hill and Western Carolina College.

John Levi Sauder (1961), Associate Dean of Adult Education
B.S., 1936 (State College); M.A., 1947 (University of Virginia).

Additional graduate work at William and Mary College and North Carolina State University.

Noah Gayle Simmons (1965), Associate Dean of College Transfer Programs
A.A., 1946 (Junior College of Flat River); B.S., 1948 (Southeast Missouri State College); M.A., 1951, Ed.D., 1960 (Washington University). Post-doctoral study at Michigan State University.

Alice Jablonski Smith (1965), Associate Degree Nursing Program
B.S.N., 1963 (East Tennessee State University)

John Shelton Smith (1960), Applied Mathematics
B.S., 1960 (North Carolina State University). Graduate work at North Carolina State University.

George John Soos (1963), Manufacturing Engineering Technology
B.S.E., 1944 (Hungarian Royal Technical Military Academy)

Frederick Robert Struthers (1964), Dean of Instruction
B.A., 1948, M.A., 1957 (University of Denver); Ph.D., 1963 (University of Texas)

Ross Clifford Charles Surphlis (1965), French
B.S., 1959 (St. Louis University); M.A., 1962 (University of Missouri)

Earl Donald Talbert (1963), Accounting, Business Data Processing
L.A., 1949 (Pfeiffer Junior College); A.B., 1951 (Catawba College)

Cora Grace Toney (1965), English
B.S., 1964, M.A., 1965 (Appalachian State Teachers College)

Francis Shirley Turnage (1964), Coordinator of Programmed Materials Laboratory
A.B., 1961 (Duke University). Graduate work at University of North Carolina at Chapel Hill.

Clarence Bertram Wade, Jr. (1964), Commercial Art and Advertising Design
Undergraduate work at University of North Carolina at Chapel Hill and Harris School of Advertising Art.

Edward Francis Waechter, Sr. (1963), Machine Shop
Undergraduate work at University of Cincinnati, Xavier University, and Ohio College of Applied Science.

Dollie Moore Weeks (1965), Associate Degree Nursing Program
Diploma, 1935 (Warren Caridler Hospital School of Nursing); B.S.N., 1947 (American University). Graduate work at William and Mary College and Johns Hopkins University.

Julia Rose Wilkinson (1961), Practical Nursing
R.N., 1936 (Rex Hospital); B.S., 1952 (George Peabody College for Teachers). Graduate work at North Carolina State University.

James Harold Williams (1963), Student Personnel Counselor
A.B., 1934 (University of North Carolina at Chapel Hill); M.A., 1953 (Appalachian State Teachers College)

Peter Wright, II (1964), Air Conditioning, Refrigeration, and Heating
A.A.S., 1950 (College of William and Mary)

David Alexander Yonders (1964), Political Science, Sociology
A.B., 1950, M.Ed., 1952 (Ohio University). Additional graduate work at Ohio State University and University of Tennessee.

HISTORY

Central Piedmont Community College was established in July, 1963, as a part of the new North Carolina system of community colleges. The institution is supported by state, federal and local funds and thus is able to provide superior instruction and optimum use of excellent equipment and laboratories at a minimum cost to the student. The campus is ideally located close to the center of the population to be served and convenient to public transportation and the expressway system serving the Greater Charlotte area.

PURPOSE

Central Piedmont Community College was organized to meet the educational needs of the community by:

Providing occupationally-oriented programs for those students who wish to enter EMPLOYMENT AT THE TECHNICIAN LEVEL.

Providing the first two years of work in the liberal arts and pre-professional fields for those students who wish to TRANSFER TO FOUR-YEAR COLLEGES.

Providing occupationally-oriented curricula for those students who wish to be EMPLOYED IN BUSINESS AND COMMERCE.

Providing occupationally-oriented curricula for those students who wish to enter EMPLOYMENT IN HEALTH RELATED FIELDS.

Providing occupationally-oriented curricula for those students who wish to enter EMPLOYMENT IN THE SKILLED TRADES.

Providing a program of GENERAL EDUCATION for the social, cultural and personal development of those individuals wishing to continue their education beyond the high school.

Providing single or combination courses needed by adults in the community to UPDATE OR UPGRADE THEIR OCCUPATIONAL CAPABILITIES to meet the challenges of a changing technological society.

Providing programs for those individuals whose educational experiences stopped short of high school graduation and who find a need for such ADDITIONAL EDUCATION IN ORDER TO FULFILL THEIR PERSONAL AMBITIONS.

Providing classes for those individuals wishing instruction in HOME AND FAMILY EDUCATION AND LEISURE TIME ACTIVITIES.

Providing COUNSELING AND GUIDANCE SERVICES to individuals who desire further education and training.

Providing COMMUNITY EDUCATIONAL SERVICES for organizations and individuals—including speakers, concerts, resource personnel or materials, special institutes or programs, reading lists, etc. as requested.

CURRICULA AT CENTRAL PIEDMONT COMMUNITY COLLEGE

Associate in Applied Science Degree Programs

- Accounting
- Business Administration
- Business Data Processing
- Chemical Technology
- Commercial Art & Advertising Design

- Computer Maintenance
- Construction Engineering Technology
- Dental Hygiene
- Drafting & Design Technology
- Electrical Technology
- Electronics Technology
- Executive Secretarial Program
- Manufacturing Engineering Technology
- Registered Nurse Program
- Scientific Data Processing
- Traffic & Transportation

Associate in Arts Degree Programs

- Liberal Arts
- Pre-Professional

Diploma Programs

- Auto Body Repair
- Automotive Mechanics
- Dental Assistant Program
- Heating, Air Conditioning & Refrigeration
- Machinist Program
- Practical Nursing
- Welding

ADMISSION REQUIREMENTS

Central Piedmont Community College follows an "open door" policy and does not impose restrictive standards for admission. Before a student registers for any program, however, aptitude and placement tests are administered and a counseling interview is arranged. This process aids the student in evaluating his potential for success in the program of his choice. Where scores on these tests or other evidence indicates a lack of readiness to commence a specific curriculum, the student will be assigned to refresher courses, to the Programmed Materials Laboratory, or to the Adult Continuing Education Division for high school credit courses; or he may be encouraged to reevaluate his occupational and educational goals. Most curricula require high school graduation or equivalent.

COUNSELING SERVICE

Educational, vocational, and personal counseling is available to students and adults in the community. All are encouraged to consult with a counselor in clarifying vocational objectives and planning educational programs.

Any student who plans to transfer to a four-year college upon completion of the work at Central Piedmont Community College should inform a counselor of his intentions. The student should indicate the institution to which he plans to transfer so that a program can be arranged which is appropriate to the curriculum requirements of the college or university of his choice.

APPLICATION FOR ADMISSION

Any person who wishes to take a course or program is asked to complete an application form and return it to the College. Upon receipt of the application, the Student Services Office will mail promptly to the prospective student instructions regarding admission procedures. Applications should be submitted well in advance of the beginning of the term in which the student desires to enroll. While students may be processed to the day of registration, an early application assures adequate time for the processing of the student and enables entry into a program where enrollment may be limited.

A student who plans to pursue a diploma or associate degree must ask his high school or college to submit a transcript of all previous work undertaken.

REGISTRATION

The College operates on a quarter system. Each term is eleven weeks in length. Students who are pursuing a program of study must register at the beginning of each quarter as they progress toward their educational objectives. All students will register during the prescribed registration period for that quarter (refer to school calendar). Fees and tuition charges must be paid at the time of registration.

TUITION AND FEES

Since the school receives financial support through local, state and federal sources, tuition is very low. Tuition charges are set by the State Board of Education and are subject to change without notice. All students taking diploma and associate degree programs pay a registration fee of $2.00 per year. The tuition schedule is explained as follows:

College Transfer Programs

Students pursuing 15 quarter hours or more—$40.00 per quarter
Students taking fewer than 15 quarter hours—$2.67 per quarter hour

Technical and Vocational Curricula

Students pursuing 15 quarter hours or more—$30.00 per quarter
Students taking fewer than 15 quarter hours—$2.00 per quarter hour

BOARDING STUDENTS

Students who must have temporary living accommodations in Charlotte are responsible for making their own arrangements to secure housing. The school will be glad to render limited assistance when possible in aiding students to make adequate preparation for accommodations. Students taking programs in the health occupations may stay in the student residence at Charlotte Memorial Hospital.

STUDENT'S RESPONSIBILITY FOR SECURING SPECIAL HELP

Instructors are available for conferences but will not demand that a person come in for extra help. It is the student's responsibility as an adult to seek out extra help if needed. In all cases an instructor will be more than willing to give help, but it is up to the individual student to ask.

GRADING SYSTEM

The following grading system is used at Central Piedmont Community College:

Letter	Numerical Equivalent	Description	Quality Points Per Quarter Hour
A	94-100	Excellent	4
B	85-93	Good	3
C	77-84	Fair	2
D	70-76	Passing	1
F	Below 70	Failing	0
DP		Dropped Passing	
DF		Dropped Failing	
NG		Not Graded	

A grade of F also is assigned when the course work is incomplete. This grade can be removed if the course work is completed satisfactorily before the end of the following quarter.

Progress reports are mailed to students at the end of each quarter. The letter grade and days absent in each course become a permanent part of each student's record.

WITHDRAWAL

Students must notify the Student Services Office when they plan to withdraw from a course or program. Failure to withdraw officially results in the automatic assignment of an F grade for the work attempted.

When the student withdraws officially before the end of the eighth week, a grade of DP or DF is assigned, depending on whether the work is passing or failing to that date.

Students cannot withdraw officially from course work taken in a quarter after the end of the eighth week of the quarter, except in emergency cases.

REFUND POLICY

Students who must withdraw from a class or program must arrange to talk with a Student Services counselor. If the request is made during the first 20 days of the quarter and approved, the student will receive a refund amounting to ⅔ of the tuition paid.

GRADUATION REQUIREMENTS

Requirements for the degree or diploma will vary according to curriculum. The student should refer to the brochure which applies to his program so that he can ascertain the course requirements for graduation. All students must have a grade point average of 2.0 (C average) to be eligible for graduation.

ADULT CONTINUING EDUCATION DIVISION

This division uses off-campus public school facilities at night in providing a variety of educational opportunities especially planned to meet the needs of adults and out-of-school youth 18 years of age and over. Classes offered, however, are not for college credit or vocational preparation. Opportunities are available for adults to obtain pre-high school and high school credit classes, home and family courses, and general interest subjects.

FINANCIAL AID PROGRAM

Scholarships

A limited number of scholarships are available at present; however, more scholarships are expected in the near future. Students desiring such aid should make this known when filing admission application. After initial payment and upon evidence of satisfactory performance by the recipient, the scholarship is payable in amounts prorated to each quarter of the school period at $50.00 per quarter. Scholarships available as of the printing of this publication are:

Charles A. Moss Scholarship

Awarded each year to one student taking the Practical Nursing curriculum. This is a full scholarship covering all tuition, fees, and textbooks in the program.

Charlotte Automotive Wholesalers

Available to students taking programs in Automotive Mechanics or Auto Body Repair. These awards pay $150.00 to each recipient.

The Charlotte News Scholarship

Available to students who are pursuing associate degree programs. These awards pay $250.00 to each recipient.

The Charlotte Observer Scholarship

Awarded to qualified students taking associate degree curricula. These stipends pay $250.00 to each recipient.

Concrete Materials, Inc.

Available to students pursuing the Construction Engineering Technology program. These pay $200.00 to each recipient.

Concrete Supply Company

Awarded to full-time Construction Engineering Technology students. These pay $200.00 to each recipient.

Corporate Insurers Service, Inc.

Given by Mr. Harry C. Wolfe, Jr., President of Corporate Insurers Service, Inc. This is a $250.00 scholarship available to a student pursuing any associate degree program.

Jefferson Standard Foundation

Awarded to a qualified Negro student taking work leading toward an Associate in Arts degree. This is a $200.00 stipend. Applicants must be graduates from high schools in the Charlotte-Mecklenburg School System.

Ruth Moss Easterling Scholarship

Available to one girl pursuing the Associate in Applied Science degree in a business curriculum. This is a $100.00 scholarship awarded by the Metropolitan Business and Professional Women's Club.

Short Term Loans

A revolving loan fund was established in 1964 by Central Piedmont Community College for the benefit of students who, at the time of registration, do not have all the necessary money to pay tuition, fees, and purchase books and supplies. Students who indicate they lack sufficient funds and can assert that this is a temporary condition may borrow up to $50.00. No interest is charged on these loans. Donors to this fund as of the printing of this publication are:

Charlotte Woman's Club	$200.00
Concrete Materials, Inc.	200.00
Concrete Supply Company	200.00
Anonymous Donors	100.00

Long Term Loans

National Defense Student Loans—The Central Piedmont Community College is participating in the National Defense Student Loan Program making funds available to students or entering freshmen who are taking at least a half-time schedule in one of the associate degree programs. The College share, 10 per cent, is being contributed by civic organizations.

The National Student Loan Fund Act makes provisions for students to borrow up to $1,000 in any one year. Three per cent interest per year is charged on the unpaid balance beginning one year after the borrower ceases to pursue a course of study at an institution of higher learning. The total loan must be repaid in ten years. Students may make application through the financial aid counselor in the Student Services Office.

North Carolina Funds for Vocational and Technical Students—The Central Piedmont Community College is participating in the student loan program established by the State Board of Education making financial assistance available to those students enrolled full time in a vocational or technical education program. Qualified students may borrow up to $300.00 in any year. Three and one-half per cent interest per year is charged on the unpaid balance beginning one year after the borrower ceases to pursue a full-time course of study at Central Piedmont Community College. The total loan must be repaid in five years. Students may make application through the financial aid counselor in the Student Services Office.

Funds to support this loan program are limited, but the College is hopeful that additional monies will be contributed by other organizations for this worthwhile purpose.

VETERANS

Qualified veterans who are admitted for instruction may be approved upon presentation of the Certificate of Eligibility issued by the Veterans Administration. Students will be accepted under Public Law 550 or Public Law 16-610. Veterans under Public Law 550 are responsible directly to the school for payment of all costs. The Veterans Administration will pay the fees of students who come under Public Law 16-610.

BOOKS AND SUPPLIES

Students are responsible for securing their own textbooks and other supplies which may be required. Since these items may be used on the first day of classes, they should be purchased on the day of registration. The College bookstore is kept open extra hours during registration.

LIBRARY FACILITIES

The library has a collection of over 14,000 books and catalogued pamphlets and receives over 120 periodicals. New titles are being added continually. The open-shelf system is used; students are encouraged to browse and use the reading room as a quiet place to study.

STUDIO, LABORATORY AND SHOP EQUIPMENT

Ample opportunity for students to make practical application of their classroom work is an inherent part of many programs offered at the College. Within the framework of regulations, which are always necessary when expensive equipment is involved, students have some of the best equipment available for their use.

ATTENDANCE POLICY

This school has no system for allowing absences from classes. Absences are a serious deterrent to good scholarship; it is impossible to receive instruction, obtain knowledge, or gain skill when absent. As all students are adults with many responsibilities, an occasional absence from class might be absolutely necessary; however, such absences in no way lessen the student's responsibility for meeting the requirements of the class. There is always, however, a direct relationship between the number of class absences and the final grade. It is the student's responsibility to contact the instructor for any missed assignments. Explanation for an absence will not be demanded, but as a matter of courtesy the reason for it should be given to the instructor.

STUDENT CONDUCT

College students are considered to be mature individuals. Their conduct, both in and out of school, is expected to be that of any respectable adult in a public place. Under these circumstances it is expected that the students will at all times consider they are living in a democratic situation and that the reputation of the institution rests on their shoulders. Common courtesy and cooperation make the above suffice for a long list of rules and penalties.

COLLEGE CALENDAR

SUMMER QUARTER 1965

June 3-4	Registration
June 7	Classes begin at 8:00 A. M.
June 7-8	Late registration
August 18-19	Early registration—Students continuing next quarter
August 20	Classes end for the quarter 5:00 P. M.

FALL QUARTER 1965

September 7-8	Registration
September 9	Classes begin at 8:00 A. M.
September 9 and 13	Late registration
November 22-23	Early registration—Students continuing next quarter
November 24	Classes end for the quarter 10:30 P. M.

WINTER QUARTER 1965-66

November 30 & Dec. 1	Registration
December 2	Classes begin at 8:00 A. M.
December 2 and 6	Late registration
December 22	Christmas holidays begin at 10:30 P. M.
January 3, 1966	Classes resume at 8:00 A. M.
February 23-24	Early registration—Students continuing next quarter
February 25	Classes end for the quarter 5:00 P. M.

SPRING QUARTER 1966

March 2-3	Registration
March 7	Classes begin at 8:00 A. M.
March 7-8	Late registration
April 7	Easter holidays begin at 10:30 P. M.
April 12	Classes resume at 8:00 A. M.
May 23-24	Early registration—Students continuing next quarter
May 24	Classes end for the quarter 10:30 P. M.

SUMMER QUARTER 1966

May 31-June 1	Registration
June 2	Classes begin at 8:00 A. M.
June 2 and 6	Late registration
July 1	July 4 holidays begin at 5:00 P. M.
July 5	Classes resume at 8:00 A. M.
August 16-17	Early registration—Students continuing next quarter
August 18	Classes end for the quarter 10:30 P.M.

FALL QUARTER 1966

September 6-7	Registration
September 8	Classes begin at 8:00 A. M.

Associate In Arts

COLLEGE TRANSFER PROGRAMS

The rapid growth of population in the United States and the demand for education beyond the high school have resulted in ever-increasing numbers of students seeking admission to colleges and universities throughout the nation. To help meet the needs of these students, community colleges, which offer the first two years of college work, are being established in all sections of the country. Central Piedmont Community College, one of the new community colleges in the North Carolina system, is dedicated to the task of assisting students toward their goal of achieving a college education.

DESCRIPTION OF THE PROGRAMS

In the first two years of college students secure a general education in areas of humanities, social studies, science, and mathematics; in addition, they begin specialized work in their own particular fields of interest. It is the aim of Central Piedmont Community College to provide quality instruction in these areas for transfer credit to senior institutions. Central Piedmont Community College promotes a series of counselor-student conferences to help the student plan his program for transfer to the college or university of his choice.

GENERAL INFORMATION

The student should consult the general information brochure for general school policies. The following information is especially relevant to the college transfer programs.

Admission

The student should forward, as early as possible in advance of the date of registration, an application and a high school transcript to the Dean of Students. Transcripts of any completed college work should be received prior to registration. While students may be processed to the date of registration, an early application assures adequate time for processing and counseling.

Central Piedmont Community College follows an "open door" policy and does not impose restrictive standards for admission. Before any student is permitted to register for a class, however, he must take the School and College Ability Test (SCAT), a mathematics test, and an English test. A student with satisfactory scores will be permitted to enter the program of his choice. Where scores on the tests indicate a lack of readiness to commence college-level work, the student will be assigned to refresher courses or to the programmed materials laboratory.

Units of Credit and Course Descriptions

Central Piedmont Community College is on a quarter system. One unit of credit is equal to one class hour meeting time per week. In the section on course descriptions in subsequent pages, there appears the course number, the title of the course, and the hours of credit for the course. A laboratory course will show the number of lecture hours and the number of laboratory hours in parentheses. Where the laboratory is required, one credit hour will equal at least two hours of laboratory time, as appropriate to the course. The letters P. R. indicate the prerequisite. The letters C.R. indicate corequisite of the course.

College Transfer Programs

Grading System

The grading system at Central Piedmont Community College is as follows:

A	Excellent	4 Quality points per quarter hour credit
B	Good	3 Quality points per quarter hour credit
C	Fair	2 Quality points per quarter hour credit
D	Passed	1 Quality point per quarter hour credit
F	Failed	0 Quality point per quarter hour credit
DP	Dropped Passing	Officially withdrawn from class, passing
DF	Dropped Failing	Officially withdrawn from class, failing

When a student stops attending a class, he must withdraw officially. When the student does not withdraw officially from the class, an F will be assigned automatically. Students cannot withdraw officially after the end of the eighth week of the quarter.

A grade of F is assigned when the course work is incomplete. This F grade can be removed if the course work is completed satisfactorily before the end of the following quarter.

In special cases an instructor may refer a student to the Programmed Materials Laboratory (and require designated minimum proficiency as certified by achievement scores on PML materials) as one of the conditions for removal of F grade within the stated time limit.

Probation

If a student receives a grade-point average of 1.5 or lower in any quarter, he will be placed on probation and asked to report the following quarter for counseling. The counselor will attempt to identify the problems of the student, and he may direct the student to a program for which he is better qualified.

Graduation Requirements

The student must complete a minimum of ninety-six quarter hours of course work to qualify for the Associate Degree. The student must have a grade-point average of 2 or "C" to be eligible for graduation.

The North Carolina Community College Advisory Council recommended a core of academic areas to be included in the curricula of all transfer students. The student is eligible for the Associate Degree when he has completed the required number of quarter hours for graduation and the minimum hours in each area listed below.

Communications English Composition 101, 102, 103 (required of all students)	9 Quarter Hours
Humanities This requirement is met by a sequence in language or the following courses: English 201, 202, 205, 206 Philosophy 101, 201 Art 101, 102	9 Quarter Hours
Social Science History 101, 102 recommended	10 Quarter Hours
Physical Science, Mathematics Biological Science The requirement is met by taking two of the three fields. At least ten hours must be taken in laboratory science.	20 Quarter Hours

Transfer of Credit

A community college advisory committee, including representatives of state-supported colleges, has worked with the Department of Community Colleges and Central Piedmont Community College to assist in the development of curricula acceptable to the senior institutions of the state. Consequently, courses taken at Central Piedmont should transfer in grade and credit to the institution as applicable to the curriculum for which such courses were intended. The student should be able to transfer to the senior institution with junior status after completing two years of credit work at Central Piedmont. Counselors and faculty members are ready to assist the student in course selection. It is the responsibility of the student, however, to familiarize himself with the catalog of the senior institution to which he will transfer, and to make periodic checks of his progress while completing freshman and sophomore requirements.

DESCRIPTION OF COURSES

ACCOUNTING

C-AC 101 Accounting I 6 (5-2)

Principles, techniques and tools of accounting for understanding the mechanics of accounting—collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, to include practical application of principles learned.

C-AC 102 Accounting II 6 (5-2

Partnership and corporation accounting including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting of data for management control rather than on bookkeeping details. Accounting services are shown as they contribute to the recognition and solution of management problems. P. R. C-AC 101.

ART

C-AT 101 History of Art 3

An illustrated survey of the development of painting, architecture, sculpture and ceramics from the preclassic to the contemporary period.

C-AT 102 Survey of Art 3

An introduction and orientation to a comprehensive picture of important aesthetic principles. A survey of the past which will encourage the student to develop his own purposes and style. Lecture-discussion documented with paintings, sculpture, reproductions and films.

EDUCATION

C-ED 201 Introduction to Education 5

A first course in education surveying the history, development and present status of education in American society, with attention given to the objectives of democratic education and the role of the teacher in their implementation.

ENGINEERING

C-EG 101 Engineering Drawing I 3 (2-3)

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

C-EG 102 Engineering Drawing II 4 (2-4)

Basically descriptive geometry; presents graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem. P. R. C-EG 101.

College Transfer Programs

ENGLISH

P-ENG 031	Fundamentals of Composition Intensive review of grammar, punctuation and the mechanic of English through original composition. *Should be considered a five-hour load for scheduling purposes.	0*
C-EH 101	English Composition I Intensive study of and practice in effective expository writing, emphasizing principles of grammar, punctuation and organization.	3
C-EH 102	English Composition II Continuation of the study of composition, emphasizing interpretation and evaluation of expository, narrative and creative writing. P. R. C-EH 101.	3
C-EH 103	English Composition III Further study in composition, emphasizing the research paper. P. R. C-EH 102.	3
C-EH 201	Major British Writers I Selected authors through Milton. Chronological development of English literature with emphasis upon the most influential and outstanding writers. A study of the various genres to establish methods of analysis for interpretation, understanding and appreciation. P. R. C-EH 103.	5
C-EH 202	Major British Writers II Selected authors from Swift to present. A continuation of C-EH 201 with particular emphasis upon the development of modern literary styles. P. R. C-EH 103.	5
C-EH 205	Major American Writers I Selected authors to Whitman. The study of American literature as it developed national characteristics, with consideration of its relationship to historical events. Emphasis upon influential and outstanding American writers. P. R. C-EH 103.	5
C-EH 206	Major American Writers II Selected authors from Mark Twain to present. A continuation of C-EH 205 with special attention to twentieth century writers and their interpretation of the modern era. P. R. C-EH 103.	5

SPEECH

C-SP 101	Fundamentals of Oral Communication Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary. P. R. C-EH 101.	3
C-SP 201	Public Speaking Study of the mechanics of speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous impromptu, prepared and memorized material. P. R. C-SP 101 or consent of instructor.	3

FRENCH

C-FR 101, 102, 103	Elementary French Basic elements of French in composition, reading and conversation designed for beginning students. Students with two high school units in French are not allowed credit for this sequence.	3-3-3
C-FR 151, 152, 153	Intermediate French Intensive review of basic grammar and vocabulary with emphasis on mastery of idiomatic forms and grammatical structure in dialogues and short stories. P. R. C-FR 103 or two high school units and satisfactory score on placement test.	3-3-3
C-FR 201, 202	Advanced French Advanced composition, oral work and reading of selections from French literature, with greater emphasis upon the latter. P. R. C-FR 153.	5-5

MATHEMATICS

P-MS 031	Developmental Algebra An intensive study of pre-college algebra designed for the purpose of providing a background in algebra and preparing the student for college-level mathematics. This is a non-credit course, but it should be counted as a five-hour load for scheduling purposes.	0

P-MS 033 Developmental Geometry 0
An intensive study of pre-college geometry for the purpose of preparing the student for college-level mathematics. This is a non-credit course, but it should be counted as a five-hour load for scheduling purposes.

C-MS 101, 102 Introduction to Mathematics; Intermediate Algebra 5-5
First courses in mathematics designed to give the essential mathematical background for college work in major fields other than mathematics, engineering or physical science. The first course in the sequence includes elementary set theory and reinforces the manipulative skills learned in elementary algebra. The second half of the sequence is a continuation, but with greater emphasis upon algebraic equations and other fundamental algebraic concepts deemed useful to individuals in a technological society. Not applicable to mathematics major. P. R. Placement examination or P-MS 031.

C-MS 110 College Algebra 5
The course includes a review of basic algebra, the study of real and complex numbers, fractions and graphs, properties of polynomials, the theory of equations, determinants and matrices. P. R. C-MS 102 or equivalent.

C-MS 115 Probability and Statistics 5
Elementary probability theory for finite spaces and random variables; binomial distribution and some applications. P. R. C-MS 101 or equivalent.

C-MS 120 Trigonometry 5
The study of trigonometric functions of the general angle, identities, sine and cosine functions, logarithmic and inverse functions.

C-MS 150 201 202 203 Analytic Geometry and Calculus 5-5-5-5 (5-1)
A unified sequence in analytic geometry, differential and integral calculus. This sequence is recommended for students in engineering, mathematics, and the physical Sciences. P. R. C-MS 110, 120, or the equivalent.

C-MS 210 Differential Equations 5
A general course in ordinary differential equations with applications. Topics include first order equations, numerical methods, solution in series and partial differential equations. P. R. C-MS 202.

PHILOSOPHY

C-PY 101 Introduction to Philosophy 5
An introduction to the basic problems of human thought and the philosophical systems dealing with these problems as well as their historical development.

C-PY 201 Logic 5
An intensive study of the methodology of valid reasoning, including formal principles of deduction and induction.

PSYCHOLOGY

C-PC 201 General Psychology 5
A survey of psychology, including organic structure, perception, motivation, learning, principles of behavior, measurements and theories of psychology.

C-PC 202 Human Development 5
Development of the normal child and adolescent, with consideration of the social, biological and cultural influences upon growth. P. R. C-PC 201.

C-PC 203 Educational Psychology 5
A study of the nature of the learning process with attention to inherited tendencies, habit and attitude formation, acquisition of skills, sense perception and retention. Includes a consider-

ation of the elements of learning theory such as conditioning, association and insight.

SCIENCE

Biology

C-BY 101 Biological Science 5 (3-4)

A foundation course designed to introduce the principles of biological sciences — principles and theories, the nature of matter, the organization of protoplasm, metabolism, growth, reproduction and a brief survey of animal and plant kingdoms.

C-BY 110, 111 Human Anatomy and Physiology 5-5 (4-2)

A study of the structure and normal functions of the human body and its systems with emphasis upon the inter-related functions of various parts and systematic processes in the development of basic physiological principles.

C-BY 150 General Bacteriology (Microbiology) 5 (3-4)

An introductory course in general bacteriology with a survey of microscopical plant and animal forms with emphasis upon the morphology, physiology and ecology of bacteria. The nature and activities of common micro-organisms of humans, soil, water, food and milk. P. R. C-BY 101 or consent.

C-BY 201 Introduction to Entomology 5 (3-4)

A basic course designed to cover the fundamentals of insect classification, development, food habits and controls. P. R. C-BY 101.

C-BY 101 General Botany 5 (3-4)

An introductory study of the structure, physiology, reproduction and taxonomy of green and non-green plants, and a survey on plant genetics and ecology. P. R. C-BY 101.

C-ZY 101 General Zoology 5 (3-4)

An introductory study of animal taxonomy, morphology, physiology and ecology. P. R. C-BY 101.

C-ZY 201 Vertebrate Zoology 5 (3-4)

Principles of vertebrate anatomy, physiology, histology, embryology, classification and homology. Origin and evolution of structures. P. R. C-ZY 101.

C-ZY 210 General Ecology 5 (3-4)

A study of the structure and function of nature. Emphasis placed upon energy flow, biogeochemical cycles, relationships, habitats and economic importance of organisms. P. R. C-BT 101 and C-ZY 101.

Chemistry

C-CY 101, 102 General Chemistry 5-5 (4-3)

An intensive treatment of basic principles with emphasis upon atomic and molecular theory. Special attention is given to quantitative topics. Laboratory work devoted to experiments which reinforce the theoretical concepts.

C-CY 103 General Chemistry III and Qualitative Analysis 5 (3-4)

A continuation of general chemistry with major emphasis upon stoichiometry and reactions involving solutions and minor emphasis upon descriptive chemistry. Laboratory practice in separation and identification of the more common cations and anions. P. R. C-BY 102.

C-CY 201 Quantitative Analysis 5 (4-3)

The theory of quantitative volumetric and gravimetric determinations, with emphasis upon the principles of precipitation, neutralization, oxidation and reduction applied to unknowns. Some modern instrumental methods will be included. P. R. C-BY 103.

C-CY 210, 211, 212 Organic Chemistry 6-6-6 (4-4)
A systematic study of the basic theories, principles and techniques of organic chemistry and their application to reactions of aliphatic and aromatic compounds and natural products. Laboratory work in purification, characterization and synthesis of organic compounds. P. R. C-CY 103.

Geology

C-GE 101 Physical Geology 5 (4-3)
An introductory course in geology, including the development of the earth, the origin of landforms, and the study of common rocks and minerals.

C-GE 201 Historical Geology 5 (4-3)
A study of the sequence of the geological periods, including the fossils and rock strata associated with the various periods.

C-PH 201 General Physics I—Mechanics 5 (4-3)
The first of three quarters in basic physics sequence covering the concepts of classical physics with emphasis upon the solution of problems. A series of selected quantitative experiments is performed in laboratory periods. Primarily for students majoring in physical science, engineering or mathematics. P. R. C-MS 150.

C-PH 202 General Physics II—Heat, Sound & Light 5 (4-3)
P. R. C-PH 201

C-PH 203 General Physics III—Electricity, Magnetism and Modern Physics. 5 (4-3)
P. R. C-PH 202.

SOCIAL SCIENCE

Anthropology

C-AY 101 General Anthropology 5
An introductory course including human classification according to physical anthropology, the nature and development of culture and patterns of human behavior in simpler societies.

Economics

C-ES 201 Economics I 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

C-ES 202 Economics II 3
Historical development of economic thought; creation of money; banking and the Federal Reserve System; monetary and fiscal policy; price, utility and costs in selected industries; competition and monopoly.

C-ES 203 Economics III 3
Distribution of income; the factors in production; wages and collective bargaining; interest and capital; profits and incentive; international payments, trade and gold flow; current economic problems. P. R. C-ES 201.

Geography

C-GY 101 Introduction to Physical Geography 5 (4-2)
A study of the basic physical elements of geography, emphasizing the climatic environment. Physical science credit is allowed for this course.

C-GY 201 Economic Geography 5
The description of world regions and the relationship of the geographic environment to economic pursuits in agriculture, industry, and commerce.

History

C-HY 101 World Civilization I 5
A survey of the history of man — his political, social, religious, intellectual, and artistic activities — from the earliest times to the seventeenth century in Europe, in Asia, and in Africa.

C-HY 102 World Civilization II 5

The concluding part of the survey of world civilization, including the trends from the seventeenth century to the present in Europe, in Asia, and in the Americas.

C-HY 151 American History I 5

A survey of the important events of the American development from the Colonial Period to 1868.

C-HY 152 American History II 5

The conclusion of the survey of the American development, including the period from 1868 to the present.

Political Science

C-PS 101 American Government (National) 5

The constitutional and legal bases of the national government in relation to its organization, powers, procedures and programs, and to the instrumentalities of popular control.

C-PS 102 American Government (State and Local) 5

The relationship of state government to the national government; state constitutions; the organization, powers, procedures and programs of the state government; the relationship of state and local governments; the role of local governments; popular control in state and local governments. P. R. C-PS 101, C-HY 151 or consent.

C-PS 201 International Relations 5

An introductory study of the inter-relationships of sovereign states in the world community, including world politics and international organization. P. R. C-PS 101 or consent.

Sociology

C-SY 201 Introduction to Sociology 5

An analysis of the society and culture dealing with social organization, control, institutions, stratification, and social change.

C-SY 202 Social Problems 5

A study of the major social problems of modern society, including family disorganization, minority groups, and problems associated with industrial and urban development. P. R. C-SY 201.

C-SY 203 Marriage and the Family 5

Study of the American family with attention given to courtship, marriage, family relationships and interdependencies, and social or cultural stresses emerging from contemporary family life. P. R. C-SY 201.

SPANISH

C-SH 101 102 103 Elementary Spanish 3-3-3

Basic elements of Spanish in composition, reading and conversation designed for beginning students. Students with two high school units in Spanish are not allowed credit for this sequence.

C-SH 151 152 153 Intermediate Spanish 3-3-3

Study and practice of reading, composition and conversation in Spanish for students with two high school units of Spanish or the equivalent. P. R. C-SH 103 or 2 high school units.

C-SH 201 202 Advanced Spanish 5-5

Advanced composition, oral work and reading of selections from Spanish literature, with greater emphasis upon the latter. P. R. C-SH 153.

Associate In Applied Science

ACCOUNTING

This field is often called "the tool of management." Successful business operation is based upon sound records—as supplied through accounting. The accounting profession involves every field of business including operational areas in the corporate, partnership, proprietorship, industrial, retail, wholesale, and government fields. Work opportunities are in all areas from clerk to controller to president.

The field is not static. Machine operation is an integral part of this work. Services performed include the keeping of records, analyzing records, preparing reports, developing and controlling budgets, auditing, and costing.

DESCRIPTION OF PROGRAM

The accounting program at Central Piedmont Community College is designed to provide a full and thorough knowledge in all basic and many advanced areas of this field. The program may be completed on a full-time basis in six quarters or in a proportionately longer period of time on a part-time schedule. Courses are offered during the day and evening.

The accounting program is designed to (1) develop the student's knowledge and understanding of the fundamental and advanced principles and concepts of accounting; (2) develop manual skills in recording and in machine operation as needed on the job; (3) familiarize the student with the areas in which accounting is used, its importance in business, and the manner in which all areas of business depend on accounting records as a strong tool.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course		Title	Course Hours Per Week Class	Lab.	Quarter Hours Credit
FIRST QUARTER					
T-ENG	302	Report Writing	3	0	3
T-BUS	302	Typewriting (or elective)*	2	3	3
T-MA	310	Business Mathematics	3	0	3
T-BUS	301	Introduction to Business	3	0	3
T-BUS	351	Business Law	3	0	3
T-BUS	319	Credit Procedures and Problems	3	0	3
			17	3	18
SECOND QUARTER					
T-ENG	303	Technical Report Writing	3	0	3
T-BUS	320	Accounting	5	2	6
T-BUS	352	Business Law	3	0	3
T-SOC	302	Economics	3	0	3
T-BUS	339	Marketing	3	0	3
			17	2	18

Accounting

Course Title			Course Hours Per Week Class	Lab.	Quarter Hours Credit
THIRD QUARTER					
T-ENG	306	Letter Writing	3	0	3
T-BUS	321	Accounting	5	2	6
T-SOC	304	Economics	3	0	3
T-BUS	353	Business Law	3	0	3
T-BUS	360	Office Machines	2	2	3
T-BUS	328	Business Insurance	3	0	3
			19	4	21
FOURTH QUARTER					
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-DP	311	Introduction to Data Processing Systems	3	2	4
T-BUS	364	Business Finance	3	0	3
T-BUS	366	Budget and Record Keeping	3	0	3
T-BUS	322	Accounting	5	2	6
			17	4	19
FIFTH QUARTER					
T-ENG	304	Public Speaking	3	0	3
T-BUS	374	Advanced Accounting	3	2	4
T-BUS	323	Cost Accounting	4	2	5
T-SOC	310	Applied Psychology	3	0	3
		Elective**	3	0	3
			16	4	18
SIXTH QUARTER					
T-BUS	368	Taxes	3	0	3
T-BUS	371	Office Management	3	0	3
T-BUS	375	Machine Accounting	3	2	4
T-BUS	369	Auditing	3	0	3
T-BUS	333	Personnel Management	3	0	3
			15	2	16

*Elective courses must be selected from business education curriculum.
**Elective courses must be selected from technical curricula.

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Lab	Quarter Hours Credit
T-ENG 302 Report Writing	3	0	3

Intensive study of and practice in effective expository writing, emphasizing principles of grammar, punctuation and organization.

T-BUS 302 Typewriting	2	3	3

The touch system is taught. The proper manipulation of the keyboard and the operation of the machine are given special attention. (Not required if student had one year in high school.)

T-MA 310 Business Mathematics	3	0	3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes and pertinent uses of mathematics in the field of business.

T-BUS 301 Introduction to Business	3	0	3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management. Prerequisite: (Take during the first quarter of work when possible.)

T-BUS 351 Business Law 3 0 3
A general course designed to acquaint the student with certain fundamental principles of business law covering contracts, negotiable instruments, and agency.

T-BUS 319 Credit Procedures and Problems 3 0 3
Principles and practices in the extension of credit and collection procedures; laws pertaining to credit extension and collecting are included.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the course. Prerequisite: T-ENG 302.

T-BUS 320 Accounting 5 2 6
Principles, techniques and tools of accounting, for understanding the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises; practical application of the principles learned.

T-BUS 352 Business Law 3 0 3
Includes the study of bailments, sales, risk-bearing, partnership, corporation, and property. Prerequisite: T-BUS 351.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-BUS 339 Marketing 3 0 3
A general survey of the field of marketing, with a detailed study of the functions, policies, and institutions involved in the marketing process.

T-ENG 306 Letter Writing 3 0 3
A course in writing purposeful, correct letters, telegrams, and minutes of meetings through experience in analyzing problem situations. Particular attention to letters involving credit, collections, complaints, orders, acknowledgments, remittances, and inquiry is also included in this course. Prerequisite: T-ENG 302.

T-BUS 321 Accounting 5 2 6
Partnership and corporation accounting including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting of data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: T-BUS 320.

T-SOC 304 Economics 3 0 3
Historical development of economic thought; creation of money; banking and the Federal Reserve System; monetary and fiscal policy; price, utility and costs in selected industries; competition and monopoly.

T-BUS 353 Business Law 3 0 3
A study of the powers, policies, methods, and procedures used by the various federal, state and local administrative agencies in promoting and regulating business enterprises. It includes a consideration of the constitutional and statutory limitations on these bodies and judicial review of administrative action.

T-BUS 360 Office Machines 2 2 3
A general survey of the business and office machines; a working knowledge of the ten-key and full keyboard adding machines, printing calculator and duplicating equipment.

T-BUS 328 Business Insurance 3 0 3
A presentation of the basic principles of risk insurance and their application; a survey of the various types of insurance.

T-ENG 307 Fundamentals of Oral Communication 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

Accounting

T-DP 311 Introduction to Data Processing Systems 3 2 4
Fundamental concepts and operational principles of data processing systems as aids in developing a basic knowledge of computers; prerequisite for the detailed study of particular computer problems.

T-BUS 364 Business Finance 3 0 3
Financing of business units, as individuals, partnerships, corporations and trusts. A detailed study is made of the organization, management and financing of businesses.

T-BUS 366 Budget and Record Keeping 3 0 3
The basic principles, methods and procedures for projection, preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis is placed on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: T-BUS 320.

T-BUS 322 Accounting 5 2 6
Thorough working knowledge of concepts used in preparation and interpretation of financial statements. Each item of the income statement and balance sheet is analyzed. Prerequisite: T-BUS 321.

T-ENG 304 Public Speaking 3 0 3
Study of the mechanics of speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous, impromptu, prepared and memorized material. Prerequisite: T-ENG 307 or consent of instructor.

T-BUS 374 Advanced Accounting 3 2 4
Advanced accounting theory and principles as applied to special accounting problems, bankruptcy proceedings, estates and trusts, and parent and subsidiary accounting. Prerequisite: T-BUS 322.

T-BUS 323 Cost Accounting 4 2 5
Nature and purpose of cost accounting; accounting for direct labor, materials, factory burden; job cost, and standard cost principles and procedures; selling and distribution costs; budgets, and executive use of cost figures. Prerequisite: T-BUS 374.

T-SOC 310 Applied Psychology 3 0 3
This course studies the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

T-BUS 368 Taxes 3 0 3
A study and application of federal, state and local taxes in various businesses and business conditions, including the following taxes: payroll, intangible, capital gain, sales, use, excise, inheritance income and real estate.

T-BUS 375 Machine Accounting 3 2 4
The application of various types of machines to accounting, statistical, and payroll work based on the principles of double entry accounting. Punch card systems. Visits to local installations with these types of machines. Prerequisite: T-BUS 321.

T-BUS 369 Auditing 3 0 3
The conduct of audits and investigations; setting up of accounts based upon audits; collecting data on working papers; arranging and systematizing of the audit, and writing the audit report. Emphasis placed on detailed audits, internal auditing, and internal control. Prerequisite: T-BUS 374.

T-BUS 333 Personnel Management 3 0 3
Covers principles of organization and management of personnel, procurement, placement, training, performance checking, supervision, remuneration, labor relations, fringe benefits and security.

T-BUS 371 Office Management 3 0 3
Presents the fundamental principles of office management. Emphasis on the role of office management, its functions, office automation, planning, controlling, organizing and actuating office problems.

BUSINESS ADMINISTRATION

Learn how to work in the field where you can find the greatest number and variety of jobs. Prepare for employment in the field with the highest paying non-managerial jobs and where the managerial field offerings are the most plentiful. This field is Business Administration. Over one-half of today's jobs are in distribution alone. The total job volume is substantially increased in the overall Business Administration field.

The leading areas which have openings available in this locality are retailing, wholesaling, industrial marketing, and service industries. Services performed by business administration graduates would include sales, advertising, merchandising, buying, credit, and personnel. These positions lead into the managerial occupations.

DESCRIPTION OF PROGRAM

The business administration program at Central Piedmont Community College may be completed on a full-time basis in six quarters or in a proportionately longer period on a part-time schedule. Required courses are closely associated with the marketing area, but will include such other fields as tax, accounting, and management.

The business administration program is designed to (1) develop the student's knowledge and understanding of the fundamental principles and concepts of marketing and distribution in today's economy and to provide them with a well-rounded general business knowledge; (2) develop skills in selling, advertising, and analyzing; (3) familiarize the student with the growth problems confronting business today and the position trained people can take in the solution of these problems.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
T-ENG	302	Report Writing	3	0	3
T-BUS	302	Typewriting (Or Elective)*	2	3	3
T-MA	310	Business Mathematics	3	0	3
T-BUS	301	Introduction to Business	3	0	3
T-BUS	351	Business Law	3	0	3
T-BUS	317	Sales Development	3	0	3
			17	3	18
SECOND QUARTER					
T-ENG	303	Technical Report Writing	3	0	3
T-BUS	320	Accounting	5	2	6
T-BUS	352	Business Law	3	0	3
T-SOC	302	Economics	3	0	3
T-BUS	339	Marketing	3	0	3
			17	2	18

Business Administration

Course Title			Course Hours Per Week		Quarter Hours
THIRD QUARTER			Class	Lab.	Credit
T-ENG	306	Letter Writing	3	0	3
T-BUS	355	Interpreting Accounting Records	3	0	3
T-SOC	304	Economics	3	0	3
T-BUS	316	Retailing	3	0	3
T-BUS	328	Business Insurance	3	0	3
T-BUS	360	Office Machines	2	2	3
			17	2	18
FOURTH QUARTER					
T-ENG	307	Oral Communications	3	0	3
T-BUS	364	Business Finance	3	0	3
T-BUS	366	Budget and Record Keeping	3	0	3
T-DP	311	Introduction to Data Processing Systems	3	2	4
T-BUS	337	Wholesaling	3	0	3
		Elective**	3	0	3
			18	2	19
FIFTH QUARTER					
T-ENG	304	Public Speaking	3	0	3
T-BUS	365	Business Finance	3	0	3
T-BUS	327	Advertising	3	2	4
T-BUS	335	Business Management	3	0	3
T-SOC	310	Applied Psychology	3	0	3
		Elective**	3	0	3
			18	2	19
SIXTH QUARTER					
T-BUS	368	Taxes	3	0	3
T-BUS	333	Personnel Management	3	0	3
T-BUS	332	Sales Promotion Management	3	0	3
T-BUS	372	Principles of Supervision	3	0	3
		Elective**	6	0	6
			18	0	18

*Elective courses must be selected from the business education curriculum.
**Elective courses must be selected from technical curricula.

COURSE DESCRIPTIONS

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
T-ENG	**302**	**Report Writing**	3	0	3

Intensive study of and practice in effective expository writing, principles of grammar, punctuation and organization.

T-BUS	**302**	**Typewriting**	2	3	3

The touch system is taught. Proper manipulation of the keyboard and the operation of the machine are given special attention.
Not required if student had one year in high school.

T-MA	**310**	**Business Mathematics**	3	0	3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes and pertinent uses of mathematics in the field of business.

T-BUS	**301**	**Introduction to Business**	3	0	3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management. Prerequisite: (To be taken in first possible quarter.)

T-BUS 351 Business Law 3 0 3
A general course designed to acquaint the student with certain fundamental principles of business law, covering contracts, negotiable instruments, and agency.

T-BUS 317 Sales Development 3 0 3
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, and using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the course. Prerequisite: T-ENG 302.

T-BUS 320 Accounting 5 2 6
Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises: practical application of the principles learned.

T-BUS 352 Business Law 3 0 3
The study of bailments, sales, risk-bearing, partnership-corporation, and property. Prerequisite: T-BUS 351.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-BUS 339 Marketing 3 0 3
A general survey of the field of marketing, with a detailed study of the functions, policies, and institutions involved in the marketing process.

T-ENG 306 Letter Writing 3 0 3
A course in writing purposeful, correct letters, telegrams, and minutes of meetings through experience in analyzing problem situations. Particular attention to letters involving credit, collections, complaints, orders, acknowledgments, remittances, and inquiry is also included in this course. Prerequisite: T-ENG 302.

T-BUS 355 Interpreting Accounting Records 3 0 3
Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements.

T-SOC 304 Economics 3 0 3
Historical development of economic thought; creation of money; banking and the Federal Reserve System; monetary and fiscal policy; price, utility and costs in selected industries; competition and monopoly.

T-BUS 316 Retailing 3 0 3
A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends.

T-BUS 328 Business Insurance 3 0 3
A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance.

T-BUS 360 Office Machines 2 2 3
A general survey of the business and office machines. A working knowledge of the ten-key and full keyboard adding machines, printing calculators and duplicating equipment.

T-ENG 307 Fundamentals of Oral Communication 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

Business Administration

T-BUS 364 Business Finance 3 0 3
Financing of business units, as individuals, partnerships, corporations and trusts; a detailed study of the organization, management and financing of businesses.

T-BUS 366 Budget and Record Keeping 3 0 3
The basic principles, methods, and procedures for projection, preparation, and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis is placed on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: T-BUS 320.

T-DP 311 Introduction to Data Processing Systems 3 2 4
Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers.

T-BUS 337 Wholesaling 3 0 3
The development of wholesaling; present day trends in the United States; a study of the functions of wholesaling.

T-ENG 304 Public Speaking 3 0 3
Study of the mechanics of Speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous, impromptu, prepared and memorized material. Prerequisite T-ENG 307 or consent of instructor.

T-BUS 365 Business Finance 3 0 3
A more advanced course designed to give the student a practical knowledge of the different kinds of stocks and bonds, mortgages, working capital, sinking funds, capitalization, sales of securities, surplus and dividends. Prerequisite: T-BUS 364.

T-BUS 327 Advertising 3 2 4
The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals, product and market research, selection of media and means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media.

T-BUS 335 Business Management 3 0 3
Principles of business management, including overview of major functions of management: planning, staffing, controlling, directing and financing. Clarification of the decision making function versus the operating function. Role of management in business—qualifications and requirements.

T-SOC 310 Applied Psychology 3 0 3
This course studies the procedures of building an efficient, enthusiastic business team and with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

T-BUS 368 Taxes 3 0 3
A study and application of federal, state and local taxes in various businesses and business conditions, including the following taxes: payroll, intangible, income, real estate, capital gain, sales and use, excise and inheritance, etc.

T-BUS 333 Personnel Management 3 0 3
Covers principles of organization and management of personnel: procurement, placement training, performance checking, supervision, remuneration, labor relations, fringe benefits and security.

T-BUS 332 Sales Promotion Management 3 0 3
The scope and activities of sales promotion with emphasis on the coordination of advertising, display, special events, and publicity. External and internal methods of promoting business, budgeting, planning, and implementing the plan. Prerequisite: T-BUS 327.

T-BUS 372 Principles of Supervision 3 0 3
Introduces the basic responsibilities of the supervisor and how he should implement them. The relationship of the supervisor to the production process; how to do the job well; opportunities for the future.

BUSINESS DATA PROCESSING

Data Processing is one of the fastest growing of the new occupations developing in our rapidly changing technological society. This relatively new occupation offers unlimited opportunities for technicians with good backgrounds in this highly technical field.

The occupational field of data processing offers a wide variety of activity with specialization possible in many of the areas. The industrial and business hierarchy includes systems and numerical analysts, programmers, coders, and machine operators. The greatest demand is for numerical and systems analysts.

DESCRIPTION OF PROGRAM

The program offered at Central Piedmont Community College is designed to develop an individual with the academic background necessary for analyst procedures. Three well-equipped laboratories, including two complete computer systems, give ample opportunity for students to learn techniques as well as write programs.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
T-MA	311	Numbering System and Boolean Algebra	5	0	5
T-DP	310	Functional Wiring Principles	4	6	7
T-BUS	309	Business Machines	0	4	2
T-DP	311	Introduction to Data Processing Systems	3	2	4
T-ENG	301	Speed Reading	2	0	0
			14	12	18
SECOND QUARTER					
T-MA	301	Technical Mathematics	5	0	5
T-DP	312	Fundamentals of Programming	5	0	5
T-BUS	320	Accounting	5	2	6
T-ENG	302	Report Writing	3	0	3
T-ISc	301	Industrial Organization and Management	3	0	3
			21	2	22
THIRD QUARTER					
T-MA	302	Technical Mathematics	5	0	5
T-DP	313	Business Programming	2	4	4
T-BUS	321	Accounting	5	2	6
T-MA	314	Statistics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
			20	6	23
FOURTH QUARTER					
T-DP	314	Scientific Programming	2	4	4
T-BUS	322	Accounting	5	2	6
T-MA	315	Statistics	5	0	5
T-ENG	307	Fundamentals of Oral Communication	3	0	3
T-MA	303	Technical Mathematics	5	0	5
			20	6	23

Data Processing Technology Business

Course Title			Course Hours Per Week		Quarter Hours
FIFTH QUARTER			Class	Lab.	Credit
T-BUS	323	Cost Accounting	4	2	5
T-DP	315	Linear Programming and Critical Path Method	2	4	4
T-SOC	302	Economics	3	0	3
T-CHEM	301	Chemistry	3	2	4
T-ELEC	309	Data Processing Electronics	3	2	4
			15	10	20
SIXTH QUARTER					
T-BUS	351	Business Law I	3	0	3
T-BUS	324	Machine Accounting Problems	0	4	2
T-BUS	325	Practical Accounting Problems	0	10	5
T-DP	316	Research Project	5	4	7
T-SOC	310	Applied Psychology	3	0	3
			11	18	20

COURSE DESCRIPTIONS

	Course Hours Per Week		Quarter Hours
	Class	Lab.	Credit
T-MA 311 Numbering System and Boolean Algebra	5	0	5

A cursory treatment of the base-ten numbering system, functional introduction to numbering systems with bases other than 10, transformation from one system to another; fundamental operation in systems other than the decimal, a detailed study of the binary system, digital devices and data processing.

T-DP 310 Functional Wiring Principles 4 6 7

The fundamental wiring necessary for basic machine functions of printing, punching, comparing and selecting. Laboratory experiments complement the theoretical aspects of this course.

T-BUS 309 Business Machines 0 4 2

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of 10-key adding machine, full-keyboard adding machine, calculator, posting and accounting machines, card punch and card verifier.

T-DP 311 Introduction to Data Processing Systems 3 2 4

Fundamental concepts and operational principles of data processing systems as aids in developing a basic knowledge of computers, prerequisite to the detailed study of particular computer problems. This course is a prerequisite for all programming courses.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-MA 301 Technical Mathematics 5 0 5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-DP 312 Fundamentals of Programming 5 0 5

Functions and capabilities of a specific data processing machine with necessary tools and raw materials. Programming drills, exercises and case studies bridge the gap from the theoretical to the real world of data processing. Prerequisites: T-DP 310, T-DP 311.

T-BUS 320 Accounting 5 2 6

Principles, techniques and tools of accounting, understanding of the mechanics of accounting-collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises; to include practical application of the principles learned.

T-ENG 302 Report Writing 3 0 3
Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-ISc 301 Industrial Organization and Management 3 0 3
A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-MA 302 Technical Mathematics 5 0 5
A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-DP 313 Business Programming 2 4 4
The effective use of data processing equipment in meeting the information needs of business; utilizing the symbolic programming system in the solution of problems. This course guides the student through the stages in the evolution of a system. The scope of the system developed will vary from a modest payroll procedure to the total information system of a large and complex business. Prerequisites: T-DP 312, T-MA 301.

T-BUS 321 Accounting 5 2 6
Partnership and corporation accounting including a study of payrolls and federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting of data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: T-BUS 320.

T-MA 314 Statistics 5 0 5
The theory of statistics and its application in modern business. Kinds of regularity that exist among random fluctuations. Experience in associating and using mathematical models to interpret physical phenomena and predicting the outcomes of experiments related to practical business problems. Prerequisite: T-MA 301.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern writing. Exercises in developing typical reports using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-DP 314 Scientific Programming 2 4 4
Designed to provide sufficient knowledge of programming systems' concepts so that any specific system may be mastered with a minimum of instruction. Analyses, evaluations and minor modifications of such systems will be made. Individual phases of certain selected systems are treated in detail in order to teach advanced programming and logical decision techniques as applied in sophisticated systems. Prerequisites: T-DP 313, T-MA 302.

T-BUS 322 Accounting 5 2 6
Thorough working knowledge of concepts used in preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed. Prerequisite: T-BUS 321.

T-MA 315 Statistics 5 0 5
Practical experiences in the statistical solution of business problems through the use of computers. Methods of organizing, presenting and interpreting data. Prerequisite: T-MA 314.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-MA 303 Technical Mathematics 5 0 5
The fundamental concepts of analytical geometry, differential and integral cal-

culus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-BUS 323 Cost Accounting 4 2 5
Basic concepts of the cost accounting function as they are within a manufacturing organization. Material costs, labor costs, manufacturing overhead and marketing cost that enter the cost accounting system are treated in detail. Prerequisite: T-BUS 322.

T-DP 315 Linear Programming and Critical Path Method 2 4 4
Lecture and case problems in the use of mathematical computer programming to increase industrial efficiency. This course presents the critical path network techniques of management planning, scheduling and control. Basic rules of network planning are presented with laboratory assignments designed to implement the theoretical aspects of the critical path method. (CPM).
T-DP 314, T-MA 315.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-CHEM 301 Chemistry 3 2 4
Study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions and emulsion. Attention given to carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry. Prerequisite: T-MA 301.

T-ELEC 309 Data Processing Electronics 3 2 4
This course will introduce the student to direct current theory and circuits as an aid to programming data processing equipment. An introduction to simple alternating current circuits will also be given.

T-BUS 351 Business Law I 3 0 3
A general course designed to acquaint the student with certain fundamental principles of business law covering contracts, negotiable instruments, and agency.

T-BUS 324 Machine Accounting Problems 0 4 2
This course is designed to interweave the student's knowledge of electronic data processing equipment and his knowledge of accounting theory. It is a practical approach to the use of electronic machines in the solution of accounting problems. Prerequisites: T-BUS 323, T-DP 313.

T-BUS 325 Practical Accounting Problems 0 10 5
The student is introduced to a practical accounting problem; he will be required to maintain business and accounting records showing daily transactions of a small business. Evaluation of the student's performance during this period will be a cooperative effort engaged in by locally assigned business personnel and faculty members. Primary purpose of this session is to give the student an overview of practical accounting procedures. Prerequisite: T-BUS 323.

T-DP 316 Research Project 5 4 7
Individual assignments in a carefully selected project will be made for each student providing an opportunity to initiate and carry out a project taken from outside the school. This course places the responsibility upon the student to solve a significant problem with minimum of teacher assistance. Prerequisites: T-DP 315, T-BUS 323.

T-SOC 310 Applied Psychology 3 0 3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relationships on the job. Motivation, feelings, and emotions are considered with particular reference to on-the-job problems. Other topics investigated are employee selection, supervision, job satisfaction and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

CHEMICAL TECHNOLOGY

The chemical industry of the southeastern United States involves (1) basic research, (2) development of chemical processes through pilot plant investigations, (3) chemical manufacturing processes, (4) sales and services, and (5) laboratory analyses and testing of materials.

Leading products are in the fields of textiles, paper, fertilizer, adhesives, protective coatings, plastics, and rubber.

Services performed by chemists, chemical engineers, and chemical technicians are in the fields of commercial and municipal water treatment, analysis of materials, testing, customer process development, and improvement of products and manufacturing processes.

DESCRIPTION OF PROGRAM

Required courses at Central Piedmont Community College are principally in chemistry, but will include courses in mathematics, physics, etc. These related areas of work will do much to round out the training of the technician.

The Chemical Technology Program is designed to:

1. develop the student's knowledge and understanding of the fundamental principles and concepts of chemistry.
2. develop laboratory manipulative skills and techniques as needed on the job.
3. familiarize the student with commercial manufacturing process problems and the part that the technician must play in the prevention and/or solution of these problems.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week Class	Lab.	Quarter Hours Credit
FIRST QUARTER					
T-CHEM	310	General Chemistry	3	6	6
T-MA	301	Technical Mathematics	5	0	5
T-ENG	301	Speed Reading	2	0	0
T-PHY	301	Physics: Properties of Matter	3	2	4
			13	8	15
SECOND QUARTER					
T-CHEM	311	General Chemistry	3	6	6
T-MA	302	Technical Mathematics	5	0	5
T-ENG	302	Report Writing	3	0	3
T-PHY	302	Physics: Work, Energy, Power	3	2	4
			14	8	18

Chemical Technology

Course Title			Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER					
T-CHEM	312	Quantitative Chemical Analysis	3	6	6
T-MA	303	Technical Mathematics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
T-PHY	303	Physics: Electricity	3	2	4
			14	8	18
FOURTH QUARTER					
T-CHEM	313	Quantitative Chemical Analysis	2	8	6
T-MECH	316	Engineering Materials	3	0	3
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-ISc	301	Industrial Organization and Management	3	0	3
T-CHEM	314	Physical Chemistry	3	2	4
			14	10	19
FIFTH QUARTER					
T-CHEM	315	Organic Chemistry	3	6	6
T-SOC	302	Economics	3	0	3
T-CHEM	317	Industrial Chemical Analysis	3	10	8
			9	16	17
SIXTH QUARTER					
T-CHEM	316	Organic Chemistry	2	6	5
T-CHEM	318	Industrial Chemical Analysis	5	10	10
			7	16	15

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
T-CHEM 310 General Chemistry	3	6	6

Intensive treatment of basic principles with emphasis on modern atomic and molecular theory. Special attention is given to quantitative topics. Laboratory work is devoted to experiments which reinforce the theoretical concepts.

Course Title	Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
T-MA 301 Technical Mathematics	5	0	5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

Course Title	Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
T-ENG 301 Speed Reading	2	0	0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Course Title	Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
T-PHY 301 Physics: Properties of Matter	3	2	4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics.

T-CHEM 311 General Chemistry 3 6 6

Intensive treatment of basic principles with emphasis on modern atomic and molecular theory. Special attention is given to quantitative topics. Laboratory work is devoted to experiments which reinforce the theoretical concepts. Prerequisite: T-CHEM 310.

T-MA 302 Technical Mathematics 5 0 5

A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-ENG 302 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are vital. A practical approach in the use of essential mathematical formulas. Prerequisite: T-PHY 301.

T-CHEM 312 Quantitative Chemical Analysis 3 6 6

Emphasis is placed on developing laboratory techniques employed in the volumetric analysis of acids and bases. The students will become thoroughly familiar with the principles and procedures of neutralization titration. Classroom work will emphasize the stoichiometric calculations involved in interpreting the results of analysis. Laboratory work will consist of percentage analysis of selected substances. Prerequisite: T-CHEM 311.

T-MA 303 Technical Mathematics 5 0 5

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-ENG 303 Technical Report Writing 3 0 3

The fundamentals of English as background for the organization and techniques of modern writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the course. Prerequisite: T-ENG 302.

T-PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, transmission, and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage and transformers are major topics of the course. Prerequisite: T-PHY 302.

T-CHEM 313 Quantiative Chemical Analysis 2 8 6

The more complex types of quantitative analysis with special emphasis on the theory of oxidation-reduction and gravimetric analysis. Instrumental analysis is introduced and use of modern analytical devices is stressed. The student will become familiar with the principles of redox reactions, ionization constanta and pH of solutions. Stress is placed on the stoichiometric calculations of quantitative chemical analysis. Classroom work complements quantitative determinations in the laboratory. Prerequisite: T-CHEM 312.

T-CHEM 316 Engineering Materials 3 0 3

Study and testing of the properties of ferrous and non-ferrous metals and plastics, load and strain measurements, behavior of materials under load, qualities other than strength and control of the properties of the materials.

T-ENG 307 Fundamentals of Oral Communications 3 0 3

Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-ISc 301 Industrial Organization and Management 3 0 3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-CHEM 314 Physical Chemistry 3 2 4

Atomic theory, states of matter, chemical thermodynamics, molecular properties of solutions, equilibria, phase role, electrochemistry, kinetics, surface chemistry and photochemistry constitute major areas of study. Prerequisite: T-CHEM 312.

T-CHEM 315 Organic Chemistry 3 6 6

Nomenclature, structure, preparation, properties, and reactions of aliphatic organic compounds. Laboratory work emphasizes techniques. Prerequisite: T-CHEM 313.

T-SOC 302 Economics 3 0 3

Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-CHEM 317 Industrial Chemical Analysis 3 10 8

A continuation of analytical chemistry, but employs the techniques of the various types of chromatography. Most of the emphasis is placed upon gas chromatography. An additional area of analysis, ion exchange, is included in this course. Prerequisites: T-CHEM 313, T-CHEM 314.

T-CHEM 316 Organic Chemistry 2 6 5

The nomenclature, structure, preparation, properties, and reactions of aromatic organic compounds. Laboratory work emphasizes techniques and involves preparation and analysis of selected organic compounds. Prerequisites: T-CHEM 313, T-CHEM 314.

T-CHEM 318 Industrial Chemical Analysis 5 10 10

The emphasis upon analysis by instrumentation is expanded to include optical methods, absorption of infrared radiation receiving most attention because of its wide applications. Colorimetry is another phase of this course which receives considerable attention. Prerequisite: T-CHEM 317.

COMMERCIAL ART AND ADVERTISING DESIGN

Artists are needed by business and industry in ever-increasing numbers in the growing cities of North Carolina. Advertising agencies, design studios, exhibit and display businesses, department stores, industrial organizations, and publishing houses are some of the many areas where the skills of the artist and designer are utilized. Many trained individuals choose to "free-lance" or perform services for customers on self-made contracts and schedules. The field of Commercial Art and Advertising Design is constantly growing and offers the successful artist excellent rewards in employment through creative achievement. Areas of employment include advertising layout and design, lettering and sign painting, displays and exhibits, animation and cartooning, technical illustration, book and magazine illustration, fashion illustration, painting and sketching, and textile design.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Community College is designed to offer the student a sound, well-rounded program. Special attention is given to basic art and design principles, the development of original thinking and actions based upon contemporary needs in this field. Through individual counseling, lectures, laboratories, and field trips each student is encouraged to pursue high standards of excellence in his or her preparation for employment.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
T-CA	310	Survey of Art	3	0	3
T-CA	320	Commercial Art and Advertising Design	3	8	7
T-CA	311	Human Anatomy	2	2	3
T-ENG	301	Speed Reading	2	0	0
P-CA	801	Introduction to Visual Communications	2	0	2
T-SOC	302	Economics	3	0	3
			15	10	18
SECOND QUARTER					
T-CA	321	Commercial Art and Advertising Design	3	8	7
T-ENG	302	Report Writing	3	0	3
T-CA	312	Life Study	2	4	4
T-DD	307	General Drafting	2	3	3
			10	15	17
THIRD QUARTER					
T-CA	322	Commercial Art and Advertising Design	3	8	7
T-ENG	313	Advertising Copywriting	3	0	3
T-CA	316	Photography	2	4	4
T-DD	308	General Drafting	2	3	3
			10	15	17

Commercial Art and Advertising Design

Course Title			Course Hours Per Week		Quarter Hours
FOURTH QUARTER			Class	Lab.	Credit
T-CA	323	Commercial Art and Advertising Design	3	8	7
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-CA	315	Industrial Illustration	2	4	4
T-CA	340	Advertising Principles	3	0	3
T-CA	330	Painting and Illustration	1	2	2
			12	14	19
FIFTH QUARTER					
T-CA	324	Commercial Art and Advertising Design	3	8	7
T-CA	317	Photography	2	4	4
T-SOC	310	Applied Psychology	3	0	3
T-CA	341	Advertising Media	3	0	3
T-CA	331	Painting and Illustration	1	2	2
			12	14	19
SIXTH QUARTER					
T-CA	325	Commercial Art and Advertising Design	3	10	8
T-CA	342	Advertising Art Direction	3	0	3
T-CA	332	Painting and Illustration	1	2	2
T-BUS	317	Sales Development	3	2	4
			10	14	17

COURSE DESCRIPTIONS

Course Title			Course Hours Per Week		Quarter Hours
			Class	Lab.	Credit

T-CA 310 Survey of Art — 3 0 3

An introduction and orientation of the potential artist to a comprehensive picture of important aesthetic principles. A survey of the past which will enable the student to develop his own purposes and style. Lecture-discussion documented with paintings, sculpture, reproductions and films.

T-CA 320 Commercial Art and Advertising Design — 3 8 7

An introduction to drawing and basic design fundamentals and principles. Emphasis is placed on line, two- and three-dimensional shapes, letter indication, sketching, perspective, light and shade, equipment and materials of the art and design profession.

T-CA 311 Human Anatomy — 2 2 3

A study of the body structure with emphasis on the skeletal and muscular systems, movement and the aging process. Graphical interpretation and response to manikins and live models with emphasis on proportioning, masses and movement.

T-ENG 301 Speed Reading — 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

P-CA 801 Introduction to Visual Communications — 2 0 2

A course designed to promote visual awareness of the natural and man-made environments and communicative mechanisms. The student actively participates in exercises of discussions designed to stimulate original thinking, reflection and action based on personal research, comparison, interpretation, form and manner of presentation.

T-SOC 302 Economics — 3 0 3

Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firms and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-CA 321 Commercial Art and Advertising Design 3 8 7
Advanced material in drawing, basic design, lettering, equipment and materials. Emphasis is placed on two- and three-dimensional form, perspective sketching, rough and finished lettering. Laboratory will consist of assigned graphical problems with critique and discussion by class participation. Prerequisite: T-CA 320.

T-ENG 302 Report Writing 3 0 3
Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in aplying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-CA 312 Life Study 2 4 4
Graphical interpretation and response to the live model covering topics such as proportioning, the aging process, character, expression and draping the model. This course will deal with building of the figure and such ingredients as placement, balance, rhythm, turning, twisting, wedging, distribution of masses, perspective of form, planes of form, abdominal arch, hair forms and variations. Prerequisite: T-CA 311.

T-DD 307 General Drafting 2 3 3
An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

T-CA 322 Commercial Art and Advertising Design 3 8 7
Introduction to layout and design for printing. Mechanics of layout, properties of type, and basic reproductive processes. Laboratory exercises will consist of preparation of comprehensive art form for presentation on magazine covers, trademarks, book covers, textile designs, furniture designs and two- and three-dimensional display figures. Assigned graphical problems with critique and discussion by class members. Prerequisite: T-CA 321.

T-ENG 313 Advertising Copywriting 3 0 3
A study of the techniques used in creating effective advertising copy for various types of media; purposes and duties of the copywriter and legal problems encountered in copywriting. Theory and practice will be given in writing copy for the various media including retail and fashion copy, mail order, direct mail. business publications, radio and television. Prerequisite: T-ENG 302.

T-CA 316 Photography 2 4 4
An introduction to the field of photography, photographic equipment and materials. A study of the fundamental techniques of the camera and its expressive possibilities in relation to the field of design and visual communications. Assigned camera projects, darkroom procedures and equipment.

T-DD 308 General Drafting 2 3 3
The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasized and the student is introduced to the "working drawing." Methods of describing complex objects with auxiliary views and/or sections and conventions are taught. Prerequisite: T-DD 307.

T-CA 323 Commercial Art and Advertising Design 3 8 7
An introduction to cartooning, intermediate layout and design techniques for the printing process. Laboratory assigned graphical problems will cover such topics as color separation, halftones and materials for the development of posters, show cards, banners, hand-lettered documents, brochures and folders. Prerequisite: T-CA 322.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

Commercial Art and Advertising Design

T-CA 315 Industrial Illustration 2 4 4
A comprehensive approach to the tools, equipment, materials and utilization of the illustration. Laboratory exercises and problems covering such topics as retouching photographs, product illustrations, production illustrations, architectural renderings, preparation of visual charts, graphs and composites. Prerequisite: T-CA 322.

T-CA 340 Advertising Principles 3 0 3
A survey of all forms of advertising, campaign preparation, economic and social values, marketing situations, product and design of package, brand names and brand loyalty.

T-CA 330 Painting and Illustration 1 2 2
An introduction to creative painting and illustrating through problems in shape, colors, space and light analysis. Laboratory exercises will explore the use of the monoprint, water color, casein, pen and ink, felt tip pen, graphite stick, conte pencil and pastels.

T-CA 324 Commercial Art and Advertising Design 3 8 7
Advanced problems in layout and design techniques for printing. Illustration, cartooning, animation, display design and lettering. Laboratory and graphic problems dealing with magazine and book illustrations, the fashion figure, outdoor sign writing, displays and exhibits for business and industry. Prerequisite: T-CA 323.

T-CA 317 Photography 2 4 4
Advanced photographic techniques and materials. Participation in studio and laboratory procedures illustrating the various applications and creative possibilities of photography in advertising. Prerequisite: T-CA 316.

T-SOC 310 Applied Psychology 3 0 3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions, are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

T-CA 341 Advertising Media 3 0 3
A detailed study of all types of advertising media and the basis for selection. Students will make an analysis of the various types of media such as newspapers, magazines, television and radio, direct mail, displays and dealer aids, trade shows and supplementary media to determine customer appeal, motivation, readability and form. Prerequisite: T-CA 340.

T-CA 331 Painting and Illustration 1 2 2
Advanced work and assigned problems utilizing water color, casein, pen and ink. An introduction will also be given to oil painting, materials and techniques. Prerequisite: T-CA 330.

T-CA 325 Commercial Art and Advertising Design 3 10 8
A course providing simulated professional working conditions utilizing advanced layout and design techniques for printing, airbrush, silk-screen, cartooning and animation. Each student will explore a variety of problems and present his solutions for general class critique and discussion. This course will climax with the review and presentation of the student's individual portfolio of professional work. Prerequisite: T-CA 324.

T-CA 342 Advertising Art Direction 3 0 3
A study of the techniques used in creating effective advertising for various types of media. The physical consideration of the advertisement such as size, position, color, frequency of insertion, layout, coupons and inquiries. Analysis of techniques to cases in national, retail, mail order, industrial and professional advertising with consideration given to budgetary practices. Prerequisite: T-CA 341.

T-CA 332 Painting and Illustration 1 2 2
Student-elected projects in water color, casein, pen and ink, oil and other media. Emphasis is placed on originality and the readiness of the student to explore self-assigned graphical tasks and problems. Prerequisite: T-CA 331.

T-BUS 317 Sales Development 3 2 4
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstration required.

CONSTRUCTION ENGINEERING TECHNOLOGY

The construction industry is large and varied and provides excellent opportunities for the individual with ability and training. Depending on the organization and the size of the project, the technician may work directly with engineers or skilled craftsmen, or he may function as a liaison between them.

Construction engineering technicians perform many of the planning and supervisory tasks necessary in this field. In the planning stages of construction they may be engaged in estimating costs, ordering materials, interpreting specifications, computing cuts and fills and storm drainage requirements, surveying, or drafting. Once the actual construction work has begun, many technicians perform supervisory functions. Some may be responsible for seeing that construction activities are performed in proper sequence, and for inspecting the work as it progresses for conformance with blueprints and specifications.

An individual after graduating from this program should qualify for various jobs such as purchaser, expediter, checker, field clerk, assistant foreman, field engineer, layout man, instrument man, estimator, construction equipment and materials salesman, and field draftsman. Upon gaining sufficient construction experience, the technician has the opportunity of advancing into positions such as project manager, job superintendent, assistant superintendent, foreman, job engineer, and contractor.

DESCRIPTION OF PROGRAM

The program of instruction at Central Piedmont Community College includes both classroom and laboratory experiences with practical application to the construction industry. Well-qualified instructors and excellent equipment will provide the student an opportunity to secure the education he needs for the many excellent positions available in this field.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course		Title	Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
T-CIV	309	Introduction to Construction Technology	2	0	2
T-DD	307	General Drafting	2	3	3
T-MA	301	Technical Mathematics	5	0	5
T-MECH	316	Engineering Materials	3	0	3
T-PHY	301	Physics: Properties of Matter	3	2	4
T-ENG	302	Report Writing	3	0	3
T-ENG	301	Speed Reading	2	0	0
			20	5	20

Construction Engineering Technology

Course		Title	Course Hours Per Week Class	Course Hours Per Week Lab.	Quarter Hours Credit
SECOND QUARTER					
T-CIV	310	Surveying I	2	6	4
T-CIV	314	Construction Drafting	2	3	3
T-MA	302	Technical Mathematics	5	0	5
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-CIV	314	Statics	5	0	5
			17	11	21
THIRD QUARTER					
T-CIV	311	Surveying II	2	6	4
T-CIV	332	Construction Materials	3	4	5
T-MA	303	Technical Mathematics	5	0	5
T-CIV	316	Strength of Materials	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
			18	10	22
FOURTH QUARTER					
T-CIV	312	Surveying III	2	6	4
T-CIV	317	Construction Methods and Equipment	3	2	4
T-CIV	319	Steel and Timber Construction	3	2	4
T-PHY	303	Physics: Electricity	3	2	4
T-CIV	334	Construction Materials Testing	2	4	4
			13	16	20
FIFTH QUARTER					
T-CIV	320	Construction Planning (Includes CPM)	3	4	5
T-CIV	321	Reinforced Concrete Construction	3	2	4
T-ISc	301	Industrial Organization and Management	3	0	3
T-CIV	322	Properties of Soils	2	4	4
T-SOC	302	Economics	3	0	3
T-CIV	323	Codes, Contracts and Specifications	2	0	2
			16	10	21
SIXTH QUARTER					
T-CIV	324	Structural Drafting	2	3	3
T-CIV	325	Construction Estimates and Costs	3	6	6
T-CIV	326	Foundation Construction	3	2	4
T-CIV	327	Construction of Roads and Pavements	3	2	4
T-SOC	310	Applied Psychology	3	0	3
T-ENG	307	Fundamentals of Oral Communications	3	0	3
			17	13	23

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week		Quarter Hours
T-CIV 309 Introduction to Construction Technology	2	0	2

By the use of outside speakers, films, and inspection trips to building and highway construction projects the student is introduced to the construction industry and to the characteristics and requirements of his future role as a construction technician.

T-DD 307 General Drafting 2 3 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographical reading are to be emphasized.

T-MA 301 Technical Mathematics 5 0 5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-MECH 316 Engineering Materials 3 0 3

Study and testing of the properties of ferrous and non-ferrous metals and plastics, load and strain measurements; behavior of materials under load, qualities other than strength, control of the properties of the materials.

T-PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-ENG 302 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying basic principles of English grammar in their day-to-day situations in industry and social life.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-CIV 310 Surveying I 2 6 4

Theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earthwork computations, transit, measurements of angles and directions, and transit-tape surveys. Prerequisite: T-MA 301, T-DD 307.

T-CIV 314 Construction Drafting 2 3 3

Study of architectural and structural drafting including plans, elevations, sections, and construction details of residential and commercial buildings, highways and highway structures; reading and analyzing architectural, structural, and mechanical blueprints pertaining to building and highway construction; introduction to specifications. Prerequisite: T-DD 307.

Construction Engineering Technology

T-MA 302 Technical Mathematics 5 0 5

A continuation of T-MA 301. Advanced alegbraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisite: T-PHY 301.

T-CIV 314 Statics 5 0 5

Forces, resultants, and types of force systems; moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structures; equilibrium of forces in space; static and kinetic friction; center of gravity, centroids, and moment of inertia. Corequisite: T-MA 302.

T-CIV 311 Surveying II 2 6 4

Traverse surveys and computations; triangulation of ordinary precision; stadia; plane table; land area calculations; topographic surveys and mapping; highway surveys and plans, including mass diagrams. Corequisite: T-MA 302, T-DD 314.

T-CIV 332 Construction Materials 3 4 5

Study of the properties and uses of timber, stone, clay products, insulating materials, laminates and adhesives, bituminous cementing materials. Study and testing of the composition and properties of plain concrete including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain predetermined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Prerequisite: T-PHY 301. Corequisite: T-CIV 316.

T-MA 303 Technical Mathematics 5 0 5

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-CIV 316 Strength of Materials 5 0 5

Fundamental stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams, introduction to statically indeterminate beams; columns; combined stresses. Prerequisite: T-CIV 314. Corequisite: T-MA 303.

T-ENG 303 Technical Report Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-CIV 312 Surveying III 2 6 4

Route surveying including horizontal and vertical curves; land surveying; introduction to aerial photogrammetry and its applications; building and road construction surveying including lines and grades for excavations, foundations, and superstructures of buildings; sewer and pipe line surveys. Prerequisite: T-CIV 311, T-MA 303.

T-CIV 317 Construction Methods and Equipment 3 2 4

Excavating methods and equipment used in building and highway construction; pile driving, construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slabs, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction; construction safety. Field inspection trips. Prerequisite: T-DD 314, T-CIV 311.

T-CIV 319 Steel and Timber Construction 3 2 4

Analysis and basic design of steel beams, tension members, columns, and riveted, high-strength bolted, welded connections; study of plate girders, industrial building roofs and bents, continuous spans, lightweight steel construction; use of American Institute of Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: T-CIV 316.

T-PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisite: T-MA 301.

T-CIV 334 Construction Material Testing 2 4 4

Study of the standards and features of mechanical testing; load and strain measurements; use of testing equipment in performance of standard tests of metals, welds, timber, clay products, plastics, and bituminous cementing materials; analysis of test data. Introduction to nondestructive testing. Prerequisite: T-CIV 332.

T-CIV 320 Construction Planning (Includes CPM) 3 4 5

Analysis of construction plant layout requirements and contractor's organization for building and highway projects. Construction scheduling; project control and supervision; coordinating trades on building construction. Operations, charts, and practical application of Critical Path Method (CPM) for construction planning, scheduling, and "time-cost" determination. Prerequisite: T-CIV 317, T-CIV 334, T-CIV 319. Corequisites: T-CIV 321, T-CIV 323.

T-CIV 321 Reinforced Concrete Construction 3 2 4

Analysis and design of reinformed concrete beams, floor systems, and columns. Use of CRSI Design Handbook. Introduction to ultimate strength design. Principles of prestressed and precast concrete. Field inspection trips. Prerequisite: T-CIV 316.

T-ISc 301 Industrial Organization and Management 3 0 3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-CIV 322 Properties of Soils 2 4 4

Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques of subsurface investigation; earth pressure theories; bearing capacity, stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: T-CIV 316.

Construction Engineering Technology

T-SOC 302 Economics 3 0 3

Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-CIV 323 Codes, Contracts and Specifications 2 0 2

Basic principles and methods most significant in contract relationships; appreciation of the legal considerations in construction work; study of the National Building code and local building codes, interpreting and outlining specification.

T-CIV 324 Structural Drafting 2 3 3

Fabricating shop practices for structural and reinforcing steels. Study conventional methods of representation, dimensioning, detailing, markings and connections. Drafting on engineering plans and detailed drawings of structural steel and reinforced concrete buildings and bridges. Detailing parts of steel, timber, and reinforced concrete structures. Prerequisites: T-DD 314, T-CIV 319, T-CIV 321. Corequisite: T-CIV 326.

T-CIV 325 Construction Estimates and Costs 3 6 6

Interpretation of working drawings of timber, structural steel, and reinforced concrete structures, and highways; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of costs; bidding procedures and preparation of bids. Prerequisite: T-CIV 320. Corequisite: T-CIV 324, T-CIV 327.

T-CIV 326 Foundation Construction 3 2 4

Exploration of sites; study of principles of foundation action; theory and construction practices pertaining to excavation bracing, cofferdams, drainage, stabilization, various types of footing, foundation walls, pile foundations, retaining walls; shoring and underpinning. Prerequisite: T-CIV 319, T-CIV 321, T-CIV 322.

T-CIV 327 Construction of Roads and Pavements 3 2 4

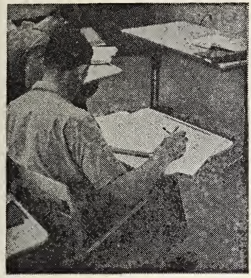
Construction practices for various types of road building, including soil properties, grading, subgrading, base courses, drainage, embankments, compaction, and formwork. Design, construction, and testing of rigid portland cement concrete and flexible bituminous pavements. Field inspection trips. Prerequisites: T-CIV 312, T-CIV 317, T-CIV 334, T-CIV 322.

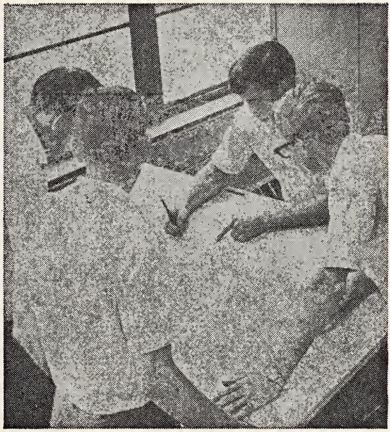
T-SOC 310 Applied Psychology 3 0 3

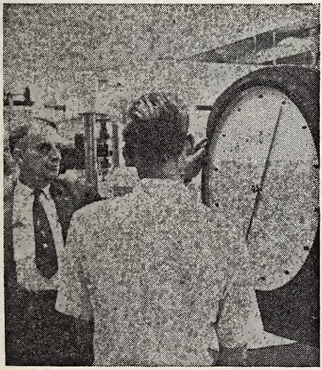
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

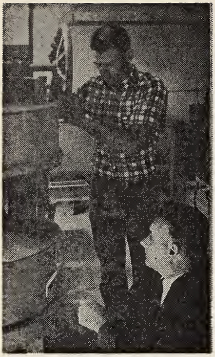
T-ENG 307 Fundamentals of Oral Communications 3 0 3

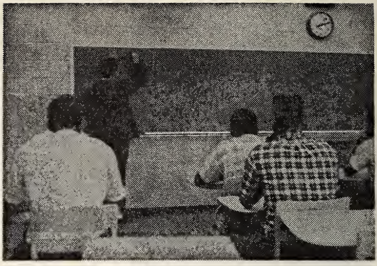
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

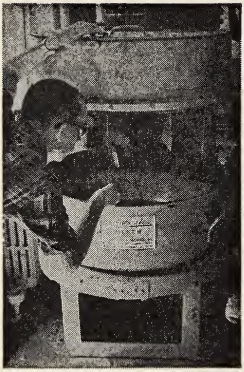


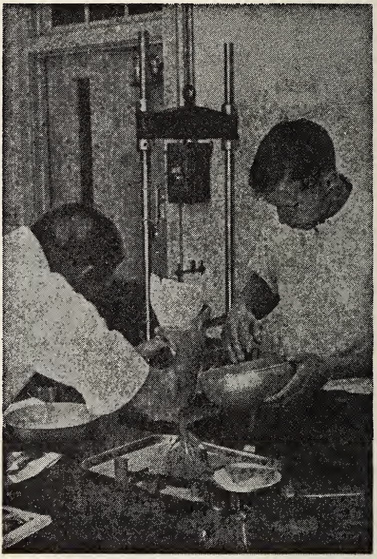


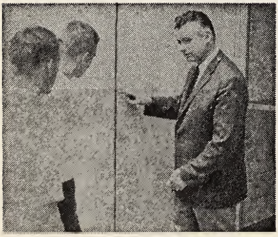


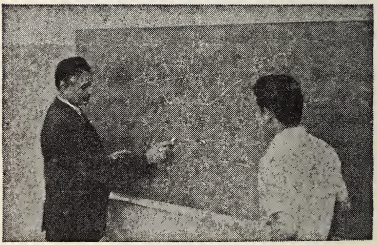












DENTAL HYGIENE PROGRAM

The dental hygienist usually is a young lady meeting college entrance standards, successfully attaining an above average position in her graduating class, and earning a creditable score on several batteries of tests. In her quest for her professional career she is prepared for health services rich in human contacts. She achieves satisfaction from helping others and gains security in an expanding and highly regarded profession as a necessary member of the dental health team. Her duties are myriad and her responsibilities challenging.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Community College will include a background of basic studies, specialized instruction and directed experience. The dental hygiene student will cultivate judgment and skill prerequisite to providing to the public oral health care under the supervision of the dentist and within the limits of the ethics and laws of the state.

The students will receive instruction in general anatomy and physiology, histology, pathology, chemistry, bacteriology, hygiene, public health, dental anatomy, nutrition, pharmacology, first aid, dental health education, ethics and economics, speech, English composition, sociology, psychology, dental materials, radiology, typing, human relations, records, clinical dental hygiene, and electives.

Our curriculum must conform to the demands and requirements, and satisfy the educational, professional, ethical and legal standards of the American Dental Association Council on Dental Education, the North Carolina State Department of Community Colleges, the North Carolina State Board of Dental Examiners, the American Dental Hygienists Association, the North Carolina Dental Society and the North Carolina Dental Hygienists Association.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course	Title		Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
C-BY	110	Human Anatomy and Physiology I	4	2	5
C-PC	201	General Psychology	5	0	5
C-EH	101	English Composition I	3	0	3
T-DHY	310	Oral Hygiene	2	0	2
T-DHY	301	Clinical Practice I	3	0	3
			17	2	18
SECOND QUARTER					
C-BY	111	Human Anatomy and Physiology II	4	2	5
T-DHY	311	Dental Anatomy I	3	0	3
C-EH	102	English Composition II	3	0	3
T-DHY	313	Personal and Community Hygiene	2	0	2
T-DHY	302	Clinical Practice II	2	3	3
			14	5	16

Dental Hygiene Program

Course Title			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
THIRD QUARTER					
T-CHEM	150	Chemistry	4	2	5
C-EH	103	English Composition II	3	0	3
C-SY	201	Introduction to Sociology	5	0	5
T-DHY	314	Dental Health Education	3	0	3
T-DHY	303	Clinical Practice III	2	3	3
			17	5	19
FOURTH QUARTER					
C-BY	150	General Bacteriology	4	2	5
T-DHY	315	Embryology and Oral Histology	3	2	4
T-DHY	316	Dental Roentgenology	1	2	2
T-DHY	304	Clinical Practive IV	1	9	4
			9	15	15
FIFTH QUARTER					
T-DHY	312	Dental Anatomy II	2	2	3
T-DHY	317	Pharmacology	2	0	2
T-DHY	318	Nutrition	2	0	2
T-DHY	319	First Aid	2	0	2
C-SP	101	Fundamentals of Oral Communications	3	0	3
T-DHY	305	Clinical Practice V	1	9	4
			12	11	16
SIXTH QUARTER					
		Elective (History, Economics, Political Science, etc.)	5	0	5
T-DHY	320	Ethics and Economics	3	0	3
T-DHY	321	Pathology	3	0	3
T-DHY	322	Public Health Dentistry I	2	0	2
T-DHY	306	Clinical Practice VI	1	9	4
			14	9	17
SEVENTH QUARTER					
T-DHY	323	Analytical Lab Procedures	2	4	4
T-DHY	324	Public Health Dentistry II	1	0	1
T-DHY	325	Preventive Dentistry	1	0	1
T-DHY	326	Practice Administration	1	0	1
T-DHY	327	Dental Materials and Procedures I	2	4	4
T-DHY	307	Clinical Practice VII	1	9	4
			8	17	15
EIGHTH QUARTER					
		Elective	5	0	5
T-DHY	308	Clinical Practice VIII	5	15	10
T-DHY	328	Dental Materials and Procedures II	3	0	3
			13	15	18

COURSE DESCRIPTIONS

Course Title

C-BY 110 Human Anatomy and Physiology I 5 (4-2)

C-BY 111 Human Anatomy and Physiology II 5 (4-2)

A study of the structure and normal functions of the human body and its systems with emphasis upon the inter-related functions of various parts and systematic processes in the development of basic physiological principles.

C-PC 201 General Psychology 5

A survey of psychology, including organic structure, perception, motivation, learning, principles of behavior, measurements and theories of psychology.

C-EH 101 English Composition I 3
Intensive study of and practice in effective expository writing, emphasizing principles of grammar, punctuation and organization.

T-DHY 310 Oral Hygiene 2
Study of the problems of individual health through an analysis of the various forces which affect the human organism; the problems of health and the application of scientific facts and principles to living.

T-DHY 301 Clinical Practice I 3
T-DHY 302 Clinical Practice II 3 (2-3)
T-DHY 303 Clinical Practice III 3 (2-3)
T-DHY 304 Clinical Practice IV 4 (1-9)
T-DHY 305 Clinical Practive V 4 (1-9)
T-DHY 306 Clinical Practice VI 4 (1-9)
T-DHY 307 Clinical Practice VII 4 (1-9)
T-DHY 308 Clinical Practice VIII 10 (5-15)
A study of the techniques of oral prophylaxis as performed by the dental hygienist within the limits of the law; and laboratory and clinical practice sufficient to render the student competent to perform dental prophylaxis. These courses include the study of the factors which contribute to a healthy condition of the mouth, with special attention to the measures employed to arrest dental caries and adjacent tissue degeneration; study of the toothbrush and methods of toothbrushing; and chair instruction in the dental health of the patient.

T-DHY 311 Dental Anatomy I 3
T-DHY 312 Dental Anatomy II 3 (2-2)
The growth and development of the teeth; structural formation and anatomy of the teeth and the supporting tissues, including reproduction of tooth forms by drawing and carving.

C-EH 102 English Composition II 3
Continuation of the study of composition, emphasizing interpretation and evaluation of expository, narrative and creative writing. Prerequisite: C-EH 101.

T-DHY 313 Personal and Community Hygiene 2
Since hygiene concerns itself with the preservation and improvement in health both in individuals and in communities, this course deals with habits of living, and with multitudes of conditions over which the individual has little control personally, but in which every member of a whole community is affected.

T-CHEM 150 Chemistry 5 (4-2)
Basic chemistry is introduced briefly in order to aid the student in understanding the Organic and Biological phases which follow. Emphasis is placed upon those areas of chemistry involved in normal and abnormal cell functions. Various chemicals of the body are studied as they relate to specific physiological processes. Mathematical computations are limited to those necessary to understand laboratory reports, and develop a concept of the quantitative nature of chemistry.

C-EH 103 English Composition III 3
Further study in composition, emphasizing the research paper. Prerequisite: C-EH 102.

C-SY 201 Introduction to Sociology 5
An analysis of the society and culture dealing with social organization, control, institutions, stratification, and social change.

T-DHY 314 Dental Health Education 3
Methods and materials used in teaching dental health in schools, in public health institutions, in industry, and in dental practice; uses of statistical, visual and auditory aids; records and reports; follow-up procedures.

C-BY 150 General Bacteriology (Microbiology) 5 (3-4)
An introductory course in general bacteriology with a survey of microscopical plant and animal forms with emphasis upon the morphology, physiology and ecology of bacteria. The nature and activities of common microorganisms of humans, soil, water, food and milk. Prerequisite: C-BY 101 or consent.

T-DHY 315 Embryology and Oral Histology 4 (3-2)
An introductory study of cells, tissues and organic structures, with particular reference to the teeth, including the use of the microscope and the examination of slides and tissues.

Dental Hygiene Program

T-DHY 316 Dental Roentgenology 2 (1-2)
A study of the theories and methods for exposing and processing roentgenograms with sufficient clinical practice included in the program to render the student competent to perform these tasks.

T-DHY 317 Pharmacology 2
Study of drugs by groups, with special consideration of those used in dentistry, including their physical and chemical properties, dosage and their therapeutic effects.

T-DHY 318 Nutrition 2
Basic principles of nutrition in relation to health and disease, including consideration of diet in reference to body tissues in general and to teeth in particular.

T-DHY 319 First Aid 2
Consideration of causes of accidents; safeguards against accidents; first aid as a preventive measure; administration of first aid promptly and intelligently when emergency demands.

C-SP 101 Fundamentals of Oral Communications 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences, and vocabulary. Prerequisite: C-EH 101.

T-DHY 320 Ethics and Economics 3
Consideration of the relationship of the dental hygienist to the practice of dental hygiene and dentistry, and the ethics and economics involved.

T-DHY 321 Pathology 3
Introduction to general pathology, with consideration of the more common diseases affecting the human body; clinical pathology of the diseases affecting the teeth and their supporting structures, including consideration of oral manifestations of selected systemic disturbances.

T-DHY 322 Public Health Dentistry I 2

T-DHY 324 Public Health Dentistry II 1
Survey of the theory and practice of preventive dentistry and public health, with emphasis upon the principles and problems of community dental health.

T-DHY 323 Analytical Lab Procedures 4 (2-4)
These are procedures the dental team and the dentist are called upon to make tests to determine lacto-baccilus counts, to utilize approved, proven oral and body fluid analyses, blood counts, and to more effectively and conclusively show connections between the human body and the oral cavity with its many components.

T-DHY 325 Preventive Dentistry 1
Those principles and methods and daily practices of an individual in good mouth health and in oral prophylaxis which play such an important role in the prevention of diseases, and in keeping the mouth, gums, teeth, in the best health. Home care, proper diet, common sense rules of mouth care are stressed as the dentists teach the patient and systematically serve them well. Prevention is an ideal that runs all through dentistry and motivates health maintenance.

T-DHY 326 Practice Administration 1
The study of the correct management of a dental practice. Dentistry is a profession first and foremost, but it is also a business and concerns itself with right relations to the patient, to other dentists, to physicians and the keeping of adequate service and financial records so all dental patients may be better served. Personal and public relations, economics, community and social relations are all an important part. The patient's very best care can only be provided as his dental office and dental team serve all patients well.

T-DHY 327 Dental Materials and Procedures I 4 (2-4)

T-DHY 328 Dental Materials and Procedures II 3
A study of the composition and source of materials employed in dentistry and their behavior under various treatments. The dental hygiene student learns through lectures, demonstrations and laboratory exercises to identify and prepare these materials for any of the routine dental procedures in the general practice of dentistry and in the specialties of the dental profession.

DRAFTING AND DESIGN

Draftsmen and designers are "white collar" workers in more than fifty-two different types of drafting occupations. Drafting is the language of industry and these technicians are the experts in the language when drawing plans and specifications describing the processes and procedures by which a product can be made and the materials which are to be used. This is a field where qualified people can make good salaries and use creative imagination by expressing their ideas on the designing boards; then they see these ideas put to use by industry in the production of a product.

DESCRIPTION OF PROGRAM

The drafting and design curriculum at Central Piedmont Community College is designed to provide a sound and extensive background in drafting fundamentals and an understanding of the application of these principles and in the design of machines, tools, dies, fixtures, cams, gears, and manufactured products. The course also provides valuable information for those interested in selling metal products or in kindred occupations. Emphasis is placed upon ability to think and plan, and not merely the making of drawings.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
			Class	Lab.	Credit
FIRST QUARTER					
T-DD	301	Technical Drafting	2	6	4
T-MA	301	Technical Mathematics	5	0	5
T-ENG	301	Speed Reading	2	0	0
T-MECH	316	Engineering Materials	3	0	3
T-PHY	301	Physics: Properties of Matter	3	2	4
T-MECH	306	Machine Processes	2	4	4
			17	12	20
SECOND QUARTER					
T-DD	302	Technical Drafting	2	6	4
T-MA	302	Technical Mathematics	5	0	5
T-ENG	302	Report Writing	3	0	3
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-MECH	307	Machine Processes	2	4	4
			15	12	20

Drafting and Design

Course Title			Course Hours Per Week		Quarter Hours
THIRD QUARTER			Class	Lab.	Credit
T-DD	303	Technical Drafting	2	6	4
T-MA	303	Technical Mathematics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
T-PHY	303	Physics: Electricity	3	2	4
T-PHY	306	Applied Mechanics	5	0	5
			18	8	21
FOURTH QUARTER					
T-DD	315	Die Design	2	6	4
T-DD	310	Descriptive Geometry	2	4	4
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-MA	308	Compound Angles	3	0	3
T-MECH	310	Physical Metallurgy	3	2	4
			13	12	18
FIFTH QUARTER					
T-DD	305	Design Drafting I	2	6	4
T-MECH	305	Strength of Materials	3	2	4
T-PHY	305	Hydraulics and Pneumatics	2	4	4
T-MECH	311	Physical Metallurgy	3	2	4
T-DD	311	Mechanisms	3	2	4
			13	16	20
SIXTH QUARTER					
T-DD	306	Design Drafting II	4	6	6
T-DD	312	Jig and Fixture Design	2	4	4
T-SOC	302	Economics	3	0	3
T-ISc	301	Industrial Organization and Management	3	0	3
T-SOC	310	Applied Psychology	3	0	3
			15	10	19

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week		Quarter Hours
	Class	Lab.	Credit
T-DD 301 Technical Drafting	2	6	4

Introduction to drafting and design practices and principles. Attainment of basic skills and techniques of drafting: use of drafting equipment; lettering; freehand; orthographic and pictorial sketching; geometric construction; orthographic instrument drawing of principal views; and standards and practices of dimensioning and noting. Methods of reproducing, filing, and storing drawings are studied and the student is introduced to "working drawings."

T-MA 301 Technical Mathematics 5 0 5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-MECH 316 Engineering Materials 3 0 3

Study and testing of the properties of ferrous and non ferrous metals and plastics, load and strain measurements; behavior of materials under load, qualities other than strength, control of the properties of the materials.

T-PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-MECH 306 Machine Processes 2 4 4

An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming.

T-DD 302 Technical Drafting 2 6 4

The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. The introduction of the graphical analysis of space problems involving points, lines, planes, and a combination of these elements. Precision and limit dimensioning practices. Prerequisite: T-DD 301.

T-MA 302 Technical Mathematics 5 0 5

A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-ENG 302 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: T-PHY 301, T-MA 301.

T-MECH 307 Machine Processes 2 4 4

Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: T-MECH 306.

T-DD 303 Technical Drawing 2 6 4

Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections will be included. Prerequisite: T-DD 302.

T-MA 303 Technical Mathematics 5 0 5

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-ENG 303 Technical Report Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: T-PHY 301, T-MA 302.

T-PHY 306 Applied Mechanics 5 0 5

Concepts and principles of statics and dynamics. Parallel concurrent and nonconcurrent force systems in coplanar and noncoplanar situations. Concepts of centroids and center of gravity, moments of inertia, fundamentals of kinetics, and kinematics of velocity and motion. Prerequisite: T-PHY 302. Corequisite: T-MA 303.

T-DD 315 Die Design 2 6 4

This course is designed to give the student a thorough knowledge of Die Design Drafting techniques, presses and their operation, the theory and formulas for cutting, drawing and forming sheet metal, and the various types of die construction and die details. Prerequisite: T-DD 303.

T-DD 310 Descriptive Geometry 2 4 4

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem. Prerequisites: T-DD 302, T-MA 302.

T-ENG 307 Fundamentals of Oral Communications 3 0 3

Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-MA 308 Compound Angles 3 0 3

A special study of solid geometrical figures, involving the relations of angles and sides of triangles that lie in different planes. The fundamental principles of compound angles are developed for the five basic types of solid figures, and these principles are used for obtaining a solution in solid trigonometry. Practical application of the theory is stressed throughout the course, such as angular hole boring, form cutter grinding, machining of jig and fixture parts, tools and dies on angle plates, etc. The course provides a combination of theory and practice to enable the student to find the proper general approach to compound angle problems in industry. Prerequisite: T-MA 303.

T-MECH 310 Physical Metallurgy 3 2 4

Introductory course in metallurgy. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Solid (crystalline) structures, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: T-MECH 316.

T-DD 305 Design Drafting I 2 6 4

Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course. Design of machine members by strength of material calculations. Prerequisites: T-DD 303, T-MA 303, T-PHY 303.

T-MECH 305 Strength of Materials 3 2 4

Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components. Prerequisites: T-PHY 303, T-MA 303.

Drafting and Design

T-PHY 305 Hydraulics and Pneumatics 2 4 4

The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Prerequisites: T-PHY 303, T-MA 303.

T-MECH 311 Physical Metallurgy 3 2 4

Properties of metals and alloys, the reaction of metals, diffusion, carburizing, metal bonding and homogenization; recrystallization and grain growth, age hardening, nitriding, internal oxidation; heat treatment of steel; laboratory experiments and demonstrations. Prerequisite: T-MECH 310.

T-DD 311 Mechanisms 3 2 4

Mathematical and drafting room solutions of problems involving the motion principles of machine elements. Study of motions of linkages, belts, chains and gears and displacements, velocities and accelerations of points and lines within these mechanisms; layout methods for designing cams, belts, pulleys, gears and gear trains and linkages. Prerequisites: T-DD 303, T-MA 303, T-PHY 302.

T-DD 306 Design Drafting II 4 6 6

Research to solve a problem in design by consulting various manufacturer's catalogs, manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and subassembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem. Design of machine members by strength of material calculations. Prerequisites: T-DD 305, T-DD 310.

T-DD 312 Jig and Fixture Design 2 4 4

Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with various types of jigs and fixtures and their design. Prerequisites: T-DD 305, T-MECH 310.

T-SOC 302 Economics 3 0 3

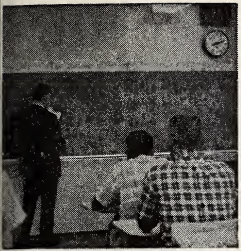
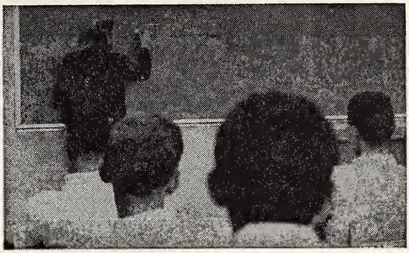
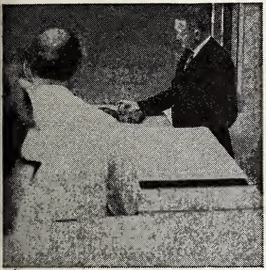
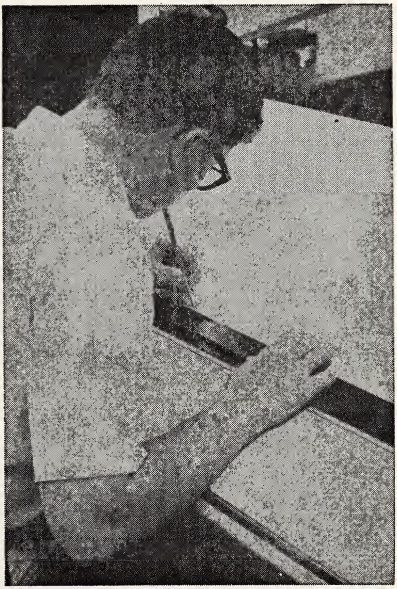
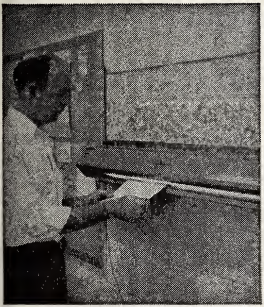
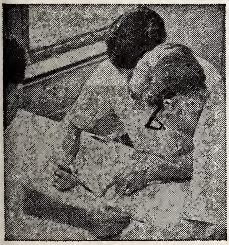
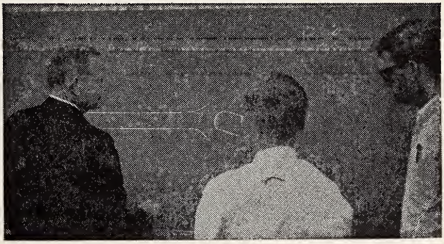
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

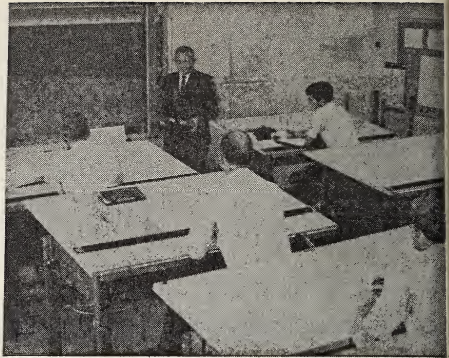
T-ISc 301 Industrial Organization and Management 3 0 3

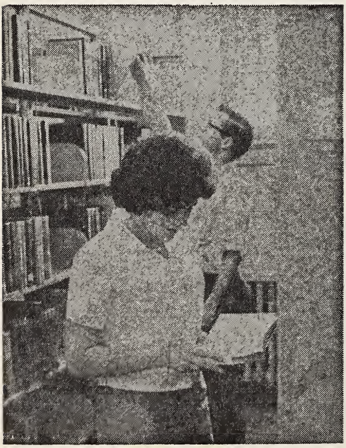
A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

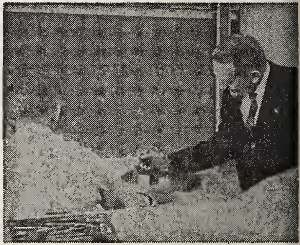
T-SOC 310 Applied Psychology 3 0 3

A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions, are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.







ELECTRICAL TECHNOLOGY

In a rapidly developing industrial society with its resulting emphasis on automation, there is an ever-increasing number of job opportunities for people well-grounded in electrical and electronic theory and trained in the practical application of the use of electrical and electronic controls in modern industry. There is now a great scarcity of these highly-trained technicians and a greater shortage is predicted unless thousands more are prepared for this interesting and challenging field. The electrical technician works with all types of electrical and electronic timing devices, magnetic amplifiers, dynamometers, phase shift controls, high frequency heating systems, electronic safety devices, recorders and controls for furnaces, welding controls, etc.

DESCRIPTION OF PROGRAM

The Associate in Applied Science Degree will be awarded upon successful completion of this curriculum. The program at Central Piedmont Community College provides the student with a strong background in electrical and electronic theory along with large amounts of laboratory time in three excellently-equipped laboratories. This laboratory time provides the student with ample opportunity to apply theory to practical problems on modern equipment. Supporting courses in mathematics, physics, technical report writing, etc. help prepare the student for the many job opportunities that are available.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
T-MA	301	Technical Mathematics	5	0	5
T-PHY	301	Physics: Properties of Matter	3	2	4
T-ENG	301	Speed Reading	2	0	0
T-DD	307	General Drafting	2	3	3
T-ELEC	310	Direct Current Electricity	5	6	8
			17	11	20
SECOND QUARTER					
T-MA	302	Technical Mathematics	5	0	5
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-ENG	302	Report Writing	3	0	3
T-ELEC	311	Alternating Current Electricity	5	6	8
			16	8	20

Electrical Technology

Course Title			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
THIRD QUARTER					
T-MA	303	Technical Mathematics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
T-SOC	310	Applied Psychology	3	0	3
T-DD	308	General Drafting	2	3	3
T-ELEC	312	Electrical Machines	5	4	7
			18	7	21
FOURTH QUARTER					
T-MA	304	Technical Mathematics	5	0	5
T-PHY	304	Physics: Light and Sound	3	2	4
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-ELN	306	Basic Electronics	3	4	5
T-ELEC	313	Electrical Controls and Circuits	3	4	5
			17	10	22
FIFTH QUARTER					
T-ISc	301	Industrial Organization and Management	3	0	3
T-ELN	307	Industrial Electronics	4	4	6
T-ELEC	314	Planning Electrical Installations	3	4	5
T-ELEC	315	Electrical Instrumentation	3	4	5
			13	12	19
SIXTH QUARTER					
T-SOC	302	Economics	3	0	3
T-ELN	308	Industrial Electronics	3	6	6
T-ELEC	316	Electrical Power Systems	3	4	5
T-ELEC	317	Electrical Analysis and Maintenance	3	2	4
			12	12	18

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week		Quarter Hours Credit
	Class	Lab.	
T-MA 301 Technical Mathematics	5	0	5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-DD 307 General Drafting 2 3 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

T-ELEC 310 Direct Current Electricity 5 6 8

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigorous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchoff's Laws, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced.

T-MA 302 Technical Mathematics 5 0 5
A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite‘ T-MA 301.

T-PHY 302 Physics: Work, Energy, Power 3 2 4
Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: T-MA 301, T-PHY 301.

T-ENG 302 Report Writing 3 0 3
Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-ELEC 311 Alternating Current Electricity 5 6 8
Alternating current and voltage: alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained. Prerequisites: T-ELEC 310, T-MA 301, T-PHY 301.

T-MA 303 Technical Mathematics 5 0 5
The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-SOC 310 Applied Psychology 3 0 3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions, are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

T-DD 308 General Drafting 2 3 3
The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasized and the student is introduced to the "working drawings." Methods of describing complex objects with auxiliary views and/or sections and conventions are taught. Prerequisite: T-DD 307.

T-ELEC 312 Electrical Machines 5 4 7
Principles of direct-current generators and motors, types and characteristics; alternating-current generators, transformers, three-phase motors, synchronous motors and single-phase motors. Prerequisites: T-MA 302, T-PHY 302, T-ELEC 311.

Electrical Technology

T-MA 304 Technical Mathematics 5 0 5
More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations and Fourier series. Prerequisite: T-MA 303.

T-PHY 304 Physics: Light and Sound 3 2 4
A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized. Prerequisites: T-MA 303, T-PHY 302.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-ELN 306 Basic Electronics 3 4 5
Fundamental concepts of electron flow, thermionic emission, characteristics of diodes, triodes, tetrodes and pentodes. Practical circuits of power supplies; voltage and power amplifiers and feedback circuits. Introduction to semi-conductors and transistors. Prerequisites: T-MA 303, T-PHY 302, T-ELEC 311.

T-ELEC 313 Electrical Controls and Circuits 3 4 5
An introduction to control systems for acceleration, speed, and braking. Alternating current contractors and relays, drum controllers, wye-delta starters, overload and overvoltage protection and sensing devices. Typical control systems; motor control, field control, controls for air-conditioning, refrigeration and heating. Prerequisites: T-MA 303, T-PHY 302, T-ELEC 312.

T-ISc 301 Industrial Organization and Management 3 0 3
A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-ELN 307 Industrial Electronics 4 4 6
Electronic control in industrial processes; fundamental operation of gaseous rectifiers, thyratrons, saturable reactors, timers, counters, computers, and their circuits. Prerequisites: T-ELN 306, T-ELEC 313.

T-ELEC 314 Planning Electrical Installations 3 4 5
A familiarization with the National Electrical Code; the power requirements and typical design of industrial and commercial installations. Design and calculation of illumination and electric heating systems. Prerequisites: T-ELEC 311, T-ELEC 313.

T-ELEC 315 Electrical Instrumentation 3 4 5
Electrical meters and their movements: indicating, integrating, recording; instrument transformers; and special metering applications. Care, operation, calibration and maintenance of electrical meters and instruments. Prerequisite: T-ELEC 311.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-ELN 308 Industrial Electronics 3 6 6
Electronics as applied to a production system; rectification; electronically controlled rectifiers, servomechanisms, motors; magnetic amplifiers; ultrasonic cleaning; and variable strobe light. Prerequisite: T-ELN 307.

T-ELEC 316 Electrical Power Systems 3 4 5
A familiarization with power plants, switch gear and circuit breakers, plant distribution, transmission lines and lightning protection. Prerequisite: T-ELEC 314.

T-ELEC 317 Electrical Analysis and Maintenance 3 2 4
An introduction to troubleshooting techniques of the common problems of direct current and alternating current machines, transformers, circuit breakers and regulators. Emphasis will be on scheduling of maintenance, lubrication, and principles of plant maintenance. Prerequisites: T-ELEC 312, T-ELEC 316.

ELECTRONICS TECHNOLOGY

Thousands of new jobs and opportunities have opened up for electronic technicians and engineers since the advent of the missile and automation, microwave telephone relays, radar electronic controls, transistors, and scores of other electronic inventions and developments. The technician can be employed in this field after he completes a program of instruction at a community college. This individual has to acquire the knowledge and develop the skills which equip him to understand circuits and to restore their electrical balance proficiently, to localize and rectify troubles which are encountered with many types of electronic equipment, to fabricate and replace all physically-damaged parts according to factory circuits and specifications, and to engage in many other activities which require a thorough understanding of electronic principles.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Community College is available to people who desire to enter an occupational field where the opportunities are unlimited. As a person pursues this program, a large portion of his time is spent in learning electrical and electronics theory and applying this knowledge through a variety of laboratory experiences. Supporting courses, an essential part of this field, include mathematics, physics, technical report writing, etc. These courses help prepare an individual for the role of junior engineer which is often the title of the electronics technician in industry.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
T-MA	301	Technical Mathematics	5	0	5
T-PHY	301	Physics: Properties of Matter	3	2	4
T-ENG	301	Speed Reading	2	0	0
T-DD	307	General Drafting	2	3	3
T-ELEC	310	Direct Current Electricity	5	6	8
			17	11	20
SECOND QUARTER					
T-MA	302	Technical Mathematics	5	0	5
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-ENG	302	Report Writing	3	0	3
T-ELEC	311	Alternating Current Electricity	5	6	8
			16	8	20

Electronics Technology

Course Title			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
THIRD QUARTER					
T-MA	303	Technical Mathematics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
T-SOC	310	Applied Psychology	3	0	3
T-ELN	312	Electronics I	5	8	9
			16	8	20
FOURTH QUARTER					
T-MA	304	Technical Mathematics	3	0	3
T-PHY	304	Physics: Light and Sound	3	2	4
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-ELN	313	Electronics II	8	8	12
			17	10	22
FIFTH QUARTER					
T-ISc	301	Industrial Organization and Management	3	0	3
T-ELN	316	Transistor Applications	5	4	7
T-ELN	317	Communications and Ultra High Frequency	2	4	4
T-ELN	318	Special Circuitry	5	4	7
			15	12	21
SIXTH QUARTER					
T-SOC	302	Economics	3	0	3
T-ELN	319	Instrumentation	5	6	8
T-ELN	320	Circuit Analysis and Maintenance	5	6	8
			13	12	19

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week: Class	Lab.	Quarter Hours Credit
T-MA 301 Technical Mathematics	5	0	5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and work group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-DD 307 General Drafting 2 3 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

T-ELEC 310 Direct Current Electricity 5 6 8

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigorous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchhoff's Law, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced.

T-MA 302 Technical Mathematics 5 0 5

A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratrics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: T-MA 301, T-PHY 301.

T-ENG 302 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-ELEC 311 Alternating Current Electricity 5 6 8

Alternating current and voltage: alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained. Prerequisites: T-ELEC 310, T-MA 301, T-PHY 301.

T-MA 303 Technical Mathematics 5 0 5

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-ENG 303 Technical Report Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-SOC 310 Applied Psychology 3 0 3

A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings, and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

T-ELN 312 Electronics I 5 8 9

A treatment of electron tubes, semi-conductors and their associated circuitry; thermionic emission; diode, triode, tetrode and pentode characteristics. Theory of semi-conductor diode and transistor operation is studied in detail. Application of vacuum tubes and semi-conductors in power supplies, voltage amplifiers power amplifiers, and the advantages and disadvantages of each is considered Prerequisites: T-ELEC 310, T-MA 301, T-PHY 301.

T-MA 304 Technical Mathematics 3 0 3
More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations and Fourier series. Prerequisite: T-MA 303.

T-PHY 304 Physics: Light and Sound 3 2 4
A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized. Prerequisite: T-MA 301.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-ELN 313 Electronics II 8 8 12
Design and analysis of vacuum tube and transistor oscillators, radio frequency analysis and intermediate frequency amplifiers. Frequency response, stage gain, distortion, noise characteristics and frequency stability will be explored. Prerequisites: T-ELN 312, T-MA 303.

T-ISc 301 Industrial Organization and Management 3 0 3
A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-ELN 316 Transistor Applications 5 4 7
Transistor circuitry and design problems. Junction diodes, transistor triodes, tunnel and zener diodes with associated circuitry. Temperature variation, transit time, and frequency response are studied in detail. Prerequisites: T-ELN 313, T-MA 304.

T-ELN 317 Communications and Ultra High Frequency 2 4 4
Application of previously studied circuits to the broad field of communications and ultra high frequency. Amplitude and frequency modulated transmitters, receivers, wave guides, cavity resonators; klystron, magnetron and traveling wave tubes are discussed. Prerequisite: T-ELN 313.

T-ELN 318 Special Circuitry 5 4 7
The design and analysis of special circuitry: wave shaping, pulse techniques, broad-band amplifiers, diode switches, multivibrators, gates, magnetic amplifiers, chopper amplifiers, clipper and clamping circuits, synchro and servo systems, photo control devices, step counters and other specific application circuitry. Prerequisites: T-ELN 314, T-ELN 316.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-ELN 319 Instrumentation 5 6 8
A basic study of sensory devices for detecting changes in pressure, temperatures, sound, light and electricity; the associated circuitry and indicating devices. Prerequisites: T-ELN 316, T-ELN 318.

T-ELN 320 Circuit Analysis and Maintenance 5 6 8
Systematic analysis of complex circuitry. Methods of locating and correcting malfunctions. Troubleshooting by voltage measurements; resistance measurements, and wave-form observations. Schematic reading and interpretation. Prerequisites: T-ELN 319, T-MA 304, T-PHY 304.

EXECUTIVE SECRETARY

Secretaries are valuable in business, industry, government and the professions. The demand for good secretaries far exceeds the supply; thus, education in this occupational field provides many opportunities to work in pleasant and attractive surroundings on interesting things for appreciative people.

The private secretary is the boss's right hand and must bring to the position—along with his/her basic skills of shorthand, typing and English— an understanding of office procedure, accounting, human relations and how business and industry fit into the American economic system.

DESCRIPTION OF PROGRAM

The Associate in Applied Science Degree will be awarded upon successful completion of this curriculum. The program of studies provides for classes in shorthand, typing, English, business correspondence, business law, etc. Opportunities to specialize in professional areas, such as medical or legal, are available during the last two quarters. Students in the Central Piedmont Community College can be assured of high quality instruction and the opportunity to prepare for gainful employment in a very important occupation.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
C-EH	101	English Composition I	3	0	3
T-BUS	302	Typewriting (or elective)*	2	3	3
T-MA	310	Business Mathematics	3	0	3
T-BUS	301	Introduction to Business	3	0	3
T-BUS	306	Shorthand (or elective)*	2	3	3
P-ENG	800	Spelling	1	0	1
T-ENG	301	Speed Reading	2	0	0
			16	6	16
SECOND QUARTER					
C-EH	102	English Composition II	3	0	3
T-BUS	303	Typewriting (or elective)*	2	3	3
T-BUS	307	Shorthand	2	3	3
T-BUS	320	Accounting	5	2	6
T-SOC	310	Applied Psychology	3	0	3
			15	8	18
THIRD QUARTER					
C-EH	103	English Composition III	3	0	3
T-BUS	304	Typewriting	2	3	3
T-BUS	308	Shorthand	2	3	3
T-SOC	302	Economics	3	0	3
T-SOC	312	Personality Development	3	0	3
T-BUS	383	Terminology and Vocabulary	3	0	3
			16	6	18

Executive Secretary

Course Title			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FOURTH QUARTER					
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-BUS	351	Business Law	3	0	3
T-BUS	356	Dictation and Transcription	3	2	4
T-BUS	350	Advanced Typewriting	2	3	3
T-BUS	360	Office Machines	2	2	3
		Elective **	3	0	3
			16	7	19
FIFTH QUARTER					
T-ENG	306	Letter Writing	3	0	3
T-BUS	357	Dictation and Transcription	3	2	4
T-BUS	340	Secretarial Procedures	3	0	3
T-DP	311	Introduction to Data Processing Systems	3	2	4
T-BUS	361	Office Machines	2	3	3
		Elective **	3	0	3
			17	7	20
SIXTH QUARTER					
T-ENG	304	Public Speaking	2	0	2
T-BUS	370	Office Application	6	0	6
T-BUS	358	Dictation and Transcription	3	2	4
T-BUS	371	Office Management	3	0	3
T-BUS	366	Budget and Record Keeping	3	0	3
		Elective **	3	0	3
			20	2	21

* Elective courses must be selected from the business education curriculum.
** Elective courses must be selected from technical curricula.

COURSE DESCRIPTIONS

Course Title	Class	Lab.	Quarter Hours Credit
C-EH 101 English Composition I	3	0	3

Intensive study of and practice in effective expository writing, principles of grammar, punctuation and organization.

T-BUS 302 Typewriting	2	3	3

Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. (Not required if student had one year of high school.)

T-MA 310 Business Mathematics	3	0	3

Mathematical operations and their applications to business: payrolls, price marking, simple and compound interest, discount, commission, inventory, insurance, and taxes.

T-BUS 301 Introduction to Business	3	0	3

(Take in first quarter where possible)
This course is designed to help the student acquire an overall picture of the various aspects of business and the environment in which it operates.

T-BUS 306 Shorthand	2	3	3

This course is designed to give a foundation of the Gregg Shorthand System theory with emphasis on phonetics, penmanship, word families, brief forms and phrases. These principles will be incorporated throughout the course to effect both speed and accuracy. (Not required if student had one year in high school.)

P-ENG 800 Spelling	1	0	1

This course should increase the student's proficiency in spelling, word division and word usage, as well as train him in the intelligent use of the dictionary.

T-ENG 301 Speed Reading	2	0	0

A concentrated effort to improve the student's reading comprehension by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

C-EH 102 English Composition II 3 0 3
Continuation of the study of composition, emphasizing interpretation and evaluation of expository, narrative and creative writing. Prerequisite: C-EH 101.

T-BUS 303 Typewriting 2 3 3
Instruction in this course emphasizes the development of speed and accuracy, with further mastery of correct typewriting techniques. These skills and techniques are applied in tabulations, manuscripts, correspondence and business forms. Prerequisite: T-BUS 302, or equivalent.

T-BUS 307 Shorthand 2 3 3
This course is a continuation of Gregg shorthand theory with more emphasis on dictation and elementary transcription. Prerequisite: T-BUS 306, or equivalent.

T-BUS 320 Accounting 5 2 6
Principles, techniques and tools of accounting, for understanding of the mechanics of accounting — collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises; practical application of the principles learned.

T-SOC 310 Applied Psychology 3 0 3
This course stresses the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

C-EH 103 English Composition III 3 0 3
Further study in composition, emphasizing the research paper. Prerequisite: C-EH 102.

T-BUS 304 Typewriting 2 3 3
Emphasis in this course is placed on the development of the student's ability to function as an expert typist, producing mailable copy. The production units are tabulation, manuscripts, correspondence, and business forms. Prerequisite: T-BUS 303.

T-BUS 308 Shorthand 2 3 3
The emphasis in this course is on the development of speed in shorthand dictation and accuracy in shorthand transcription. Prerequisite: T-BUS 307.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-BUS 312 Personality Development 3 0 3
This course is designed to help the student recognize the importance of the physical, intellectual, social and emotional dimensions of personality. The student is guided into an individual program of improvement.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary. Prerequisite: C-EH 101.

T-BUS 351 Business Law 3 0 3
A general course designed to acquaint the student with certain fundamentals and principles of business law covering contracts, negotiable instruments, and agency.

T-BUS 356 Dictation and Transcription * 3 2 4
The skill of taking dictation and of transcribing at the typewriter materials appropriate to the course of study; a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Prerequisite: T-BUS 308.

* A student may elect to take 356L (Legal), 356M (Medical), or 356T (Technical) in addition to the basic courses in Dictation and Transcription.

Executive Secretary

T-BUS 350 Advanced Typewriting 2 3 3
Emphasis in this course is placed on the development of individual production rates. The student learns the techniques needed in planning and in typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, and the typing of reports, manuscripts and legal documents. Prerequisite: T-BUS 304.

T-BUS 360 Office Machines 2 2 3
A general survey of business and office machines; a working knowledge of the ten-key and full keyboard adding machines, printing calculators and duplicating equipment.

T-ENG 306 Letter Writing 3 0 3
A course in writing purposeful, correct letters, telegrams, and minutes of meetings through experience in analyzing problem situations. Particular attention to letters involving credit, collections, complaints, orders, acknowledgements, remittances, and inquiry is also included in this course. Prerequisite: C-EH 101.

T-BUS 357 Dictation and Transcription 3 2 4
Using materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business, technical, and professional offices. Prerequisite: T-BUS 356.

T-BUS 340 Secretarial Procedures 3 0 3
Designed to acquaint the student with all responsibilities encountered by a secretary during the work day. All the general office skills outside of machine operation will be discussed. These include receptionist duties, handling the mail, telephone techniques, travel information, telegrams, office records, purchasing of supplies, desk and office organization, insurance claims, and personal problems in getting along with others on the job.

T-DP 311 Introduction to Data Processing Systems 3 2 4
Fundamental concepts and operational principles of data processing systems as an aid in developing a basic knowledge of computers, prerequisite to the detailed study of particular computer problems.

T-BUS 361 Office Machines 2 2 3
Instruction in the operation of the bookkeeping-accounting machines and the dictating and transcribing machines. Prerequisite: T-BUS 360.

T-ENG 304 Public Speaking 2 0 2
Study of the mechanics of speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous, impromptu, prepared and memorized material. Prerequisite: T-ENG 307 or consent of instructor.

T-BUS 370 Office Application 6 0 6
During the sixth quarter only, students are assigned to work in a business or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the course of study. Prerequisite: T-BUS 361.

T-BUS 358 Dictation and Transcription 3 2 4
Principally a speed building course, using materials appropriate to the course of study, with emphasis on speed as well as accuracy. Prerequisite: T-BUS 357.

T-BUS 371 Office Management 3 0 3
Presents the fundamental principles and successful practices used in getting office work accomplished. Case problems are used in making effective solutions to office management problems. (During 5th or 6th quarter only.)

T-BUS 366 Budget and Record Keeping 3 0 3
The basic principles, methods, and procedures for projection, preparation, and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis is placed on the necessity of accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: T-BUS 320.

T-BUS 383 Terminology and Vocabulary 3 0 3
An understanding of the terminology and vocabulary appropriate to the course of study, as used in businesses and professional offices.

MANUFACTURING ENGINEERING TECHNOLOGY

People working in this field are considered part of management. Their part on the management team involves the processes by which a product is made and the coordination of the manufacturing sequence. People employed in this fascinating and rewarding occupation have employment opportunities in three major areas: (1) engineering technology with job classification as quality control, project engineering and development, inventory and materials control, process planning, production planning and control, time and motion, material handling, estimating, etc.; (2) sales and company representation with job titles as liaison engineer, sales engineer and factory representative; (3) operations with job classifications as assistant shop superintendent, supervisor and group leader.

DESCRIPTION OF PROGRAM

The Manufacturing Engineering Technology program offered at Central Piedmont Community College enables the student to receive a well-balanced program of instruction. Because of the many different opportunities available, students pursuing this program take a large variety of laboratory and theory courses. This excellent combination of theory and practical course work in up-to-date, well-equipped laboratories provides the student with an opportunity to secure an excellent background for employment.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
T-DD	307	General Drafting	2	3	3
T-MA	301	Technical Mathematics	5	0	5
T-ENG	302	Report Writing	3	0	3
T-PHY	301	Physics: Properties of Matter	3	2	4
T-MECH	306	Machine Processes	2	4	4
T-MECH	316	Engineering Materials	3	0	3
T-ENG	301	Speed Reading	2	0	0
			20	9	22

SECOND QUARTER

			Class	Lab.	Credit
T-DD	308	General Drafting	2	3	3
T-MA	302	Technical Mathematics	5	0	5
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-MECH	307	Machine Processes	2	4	4
T-SOC	310	Applied Psychology	3	0	3
			18	9	22

Course Title			Course Hours Per Week		Quarter Hours Credit
THIRD QUARTER			Class	Lab.	
T-MA	303	Technical Mathematics	5	0	5
T-PHY	303	Physics: Electricity	3	2	4
T-ENG	303	Technical Report Writing	3	0	3
T-MECH	308	Machine Processes	2	4	4
T-DD	309	General Drafting	2	3	3
			15	9	19

FOURTH QUARTER

			Class	Lab.	Quarter Hours Credit
T-MECH	320	Process Planning	3	2	4
T-MECH	310	Physical Metallurgy	3	2	4
T-MA	308	Compound Angles	3	0	3
T-PHY	306	Applied Mechanics	5	0	5
			14	4	16

FIFTH QUARTER

			Class	Lab.	Quarter Hours Credit
T-MECH	311	Physical Metallurgy	3	2	4
T-PHY	305	Hydraulics and Pneumatics	2	4	4
T-DD	311	Mechanisms	3	2	4
T-MECH	305	Strength of Materials	3	2	4
T-ISc	302	Quality Control	3	2	4
			14	12	20

SIXTH QUARTER

			Class	Lab.	Quarter Hours Credit
T-ISc	301	Industrial Organization and Management	3	0	3
T-DD	312	Jig and Fixture Design	2	4	4
T-ISc	309	Plant Layout	3	2	4
T-MECH	313	Production Planning	3	0	3
T-ISc	303	Motion Study	3	2	4
T-SOC	302	Economics	3	0	3
			17	8	21

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week		Quarter Hours Credit
	Class	Lab.	
T-DD 307 General Drafting	2	3	3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

T-MA 301 Technical Mathematics 5 0 5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-ENG 302 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-MECH 306 Machine Processes 2 4 4

An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming.

T-MECH 316 Engineering Materials 3 0 3

Study and testing of the properties of ferrous and non-ferrous metals and plastics, load and strain measurements; behavior of materials under load, qualities other than strength, control of the properties of the materials.

T-ENG 301 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-DD 308 General Drafting 2 3 3

The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasized and the student is introduced to the "working drawing." Methods of describing complex objects with auxiliary views and/or sections and conventions are taught. Prerequisite: T-DD 307.

T-MA 302 Technical Mathematics 5 0 5

A continuation of T-MA 301. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-ENG 307 Fundamentals of Oral Communications 3 0 3

Technical speech is to develop the speaking skills with emphasis upon the dual role of communications as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

T-PHY 302 Physics: Work, Energy, Power 3 2 4

The major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: T-PHY 301, T-MA 301.

T-MECH 307 Machine Processes 2 4 4

Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: T-MECH 306.

T-SOC 310 Applied Psychology 3 0 3

A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings, and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the students may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

T-MA 303 Technical Mathematics 5 0 5

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: T-PHY 301, T-MA 302.

T-ENG 303 Technical Report Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern writing. Exercises in developing typical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-MECH 308 Machine Processes 2 4 4

Modern machine tools of industry. Theory and practice with shaper, slotter, planer, turret lathe, screw machine, grinding and finishing machines. Gear design and the processes of gear manufacturing. Prerequisite: T-MECH 307.

T-DD 309 General Drafting 2 3 3

Intersections and developments and their practical solutions will be studied and where applicable, model solutions shall accompany the problems. The various types and methods employed to produce isometric and oblique drawings, isometric, dimetric and trimetric projections and perspectives will be included. Prerequisite: T-DD 308.

T-MECH 320 Process Planning 3 2 4

Course includes the application and theory of process planning where the student will put to use all his previously gained knowledge of manufacturing processes to practical use by solving actual process planning problems. Emphasis is placed on the proper selection of process and machinery in the light of the quantities involved, and possible alternate methods will be explored. The basic concept of making the best possible product in the shortest period of time and the most economical way is stressed throughout the course. Prerequisite: T-MECH 308.

T-MECH 310 Physical Metallurgy 3 2 4

Introductory course in metallurgy. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Solid (crystalline) structures, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: T-MECH 316.

T-MA 308 Compound Angles 3 0 3

A special study of solid geometrical figures, involving the relations of angles and sides of triangles that lie in different planes. The fundamental principles of compound angles are developed for the five basic types of solid figures, and these principles are used for obtaining a solution in solid trigonometry. Practical application of the theory is stressed throughout the course such as angular hole boring, form cutter grinding, machining of jig and fixture parts, tools and dies on angle plates, etc. The course provides a combination of theory and practice to enable the student to find the proper general approach to compound angle problems in industry. Prerequisite: T-MA 303.

T-PHY 306 Applied Mechanics 5 0 5

Concepts and principles of statics and dynamics. Parallel concurrent and noncurrent force systems in coplanar and noncoplanar situations. Concepts of centroids and center of gravity, moments of inertia, fundamentals of kinetics, and kinematics of velocity and motion. Prerequisites: T-MA 303, T-PHY 302.

T-MECH 311 Physical Metallurgy 3 2 4

Properties of metals and alloys, the reactions of metals, diffusion, carburizing, metal bonding and homogenization; recrystallization and grain growth, age hardening, nitriding, internal oxidation; heat treatment of steel; laboratory experiments and demonstrations. Prerequisite: T-MECH 310.

T-PHY 305 Hydraulics and Pneumatics 2 4 4

The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs.

T-DD 311 Mechanisms 3 2 4

Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains. Prerequisites: T-DD 308, T-MA 302.

T-MECH 305 Strength of Materials 3 2 4

Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components. Prerequisites: T-PHY 302, T-MA 302.

T-ISc 302 Quality Control 3 2 4

Principles and techniques of quality control and cost saving. Organization and procedure for efficient quality control. Functions, responsibilities, structure, costs, reports, records, personnel and vendor-customer relationships in quality control. Sampling inspections, process control and tests for significance.

T-ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

T-DD 312 Jig and Fixture Design 2 4 4

Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures and their design. Prerequisite: T-DD 308.

T-ISc 309 Plant Layout 3 2 4

A practical study of factory planning with emphasis on the most efficient arrangements of work areas to achieve lower manufacturing costs. Layouts for small and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment. Effective management of men, money and materials in a manufacturing operation. Prerequisites: T-DD 309, T-MECH 308.

T-MECH 313 Production Planning 3 0 3

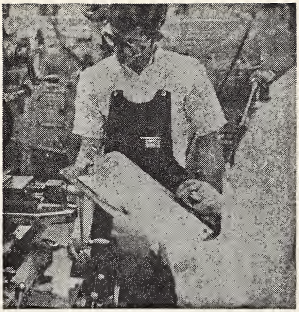
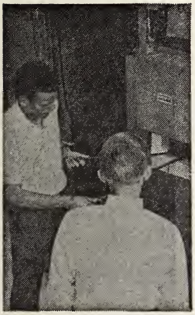
Day-to-day plant direction; forecasting, product planning and control, scheduling, dispatching, routing, and inventory control. Case histories are discussed in the classroom, and courses of corrective action are developed. Prerequisites: T-MECH 320, T-DD 308.

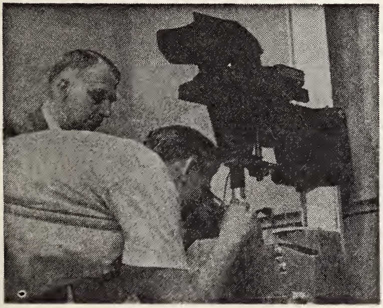
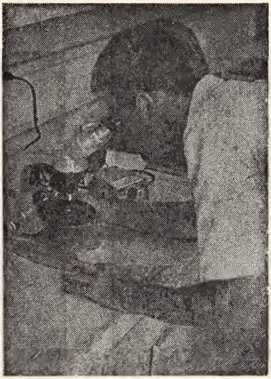
T-ISc 303 Motion Study 3 2 4

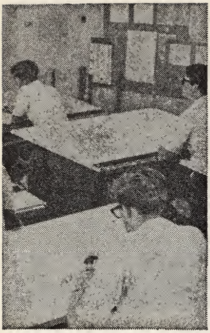
Types of methods studies and their applications. Process charts, analysis sheets, time study, work simplification, skill and effort rating.

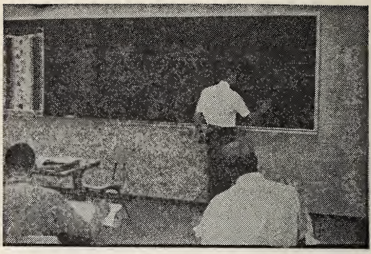
T-SOC 302 Economics 3 0 3

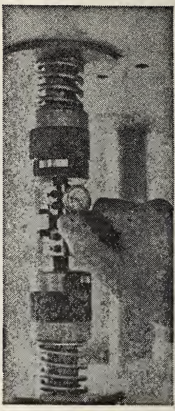
The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

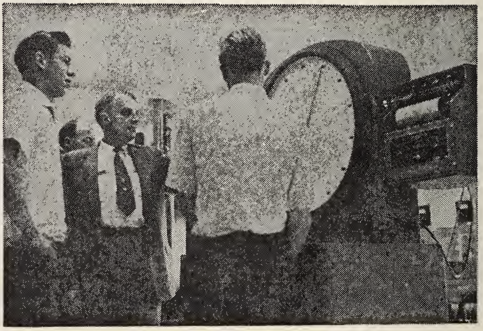











REGISTERED NURSE PROGRAM

The need for adequately prepared registered nurses is acute, and this shortage is increasing. As advances in medical science continue to expand the life expectancy of individuals, the growth in population increases the demand for nursing services. Nursing is a health occupation devoted to conserving life and promoting health; it is based upon scientific knowledge, nursing skills, and an understanding of the nature and needs of human beings in health and in sickness. The course of study leading to an Associate Degree in Nursing prepares the nurse to serve effectively in general duty nursing positions in hospitals and other comparable settings.

DESCRIPTION OF PROGRAM

The Associate in Applied Science Degree will be awarded upon successful completion of this program, and graduates will be eligible to take the State Board examinations for licensure as a registered nurse. The educational program consists of the study of nursing theory and practice interwoven with other general college education subjects such as the basic sciences, social sciences, and English. These classes meet on the college campus and nurses are in classes with other college students. Nursing experiences with patients are planned in the modern, up-to-date facilities of Charlotte Memorial Hospital and in other community health agencies. Clinical experiences are carefully selected for educational purposes. These experiences include the care of patients with medical, surgical, and psychiatric problems, and the care of mothers, infants and children.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			**Class**	**Lab.**	
C-EH	101	English Composition I	3	0	3
C-BY	110	Human Anatomy and Physiology I	4	2	5
C-PC	201	General Psychology	5	0	5
T-SOC	312	Personality Development	3	0	3
T-NSG	301	Introduction to Medical-Surgical Nursing	3	6	5
			18	8	21
SECOND QUARTER					
C-EH	102	English Composition II	3	0	3
C-BY	111	Human Anatomy and Physiology II	4	2	5
C-PC	202	Psychology, Human Growth & Development	5	0	5
T-NSG	302	Medical-Surgical Nursing I	3	9	6
			15	11	19

Registered Nurse Program

Course Title			Course Hours Per Week		Quarter Hours Credit
THIRD QUARTER			Class	Lab.	
C-EH	103	English Composition III	3	0	3
C-BY	150	General Bacteriology	4	2	5
C-SY	201	Introduction to Sociology	5	0	5
T-NSG	303	Medical-Surgical Nursing II	3	9	6
			15	11	19
FOURTH QUARTER					
T-CHEM	150	Chemistry	4	2	5
T-NSG	305	Maternal and Child Health Nursing I	4	18	10
			8	20	15
FIFTH QUARTER					
C-SY	203	Sociology, Marriage and the Family	5	0	5
T-NSG	306	Maternal and Child Health Nursing II	4	18	10
			9	18	15
SIXTH QUARTER					
	*	Elective (History, Economics, Political Science, etc.)	5	0	5
T-NSG	307	Neuropsychiatric Nursing	4	18	10
			9	18	15
SEVENTH QUARTER					
C-SP	101	Fundamentals of Oral Communication	3	0	3
T-NSG	304	Medical-Surgical Nursing III	4	18	10
			7	18	13
EIGHTH QUARTER					
T-NSG	308	Trends in Nursing	3	0	3
T-NSG	309	Seminar in Nursing	3	24	11
			6	24	14

* Electives are selected from the College Transfer Curriculum.

COURSE DESCRIPTIONS

C-EH 101 English Composition I 3

Intensive study of and practice in effective expository writing, emphasizing principles of grammar, punctuation and organization.

C-BY 110 Human Anatomy and Physiology I 5 (4-2)

C-BY 111 Human Anatomy and Physiology II 5 (4-2)

A study of the structure and normal functions of the human body and its systems with emphasis upon the inter-related functions of various parts and systematic processes in the development of basic physiological principles.

C-PC 201 General Psychology 5

A survey of psychology, including organic structure, perception, motivation, learning, principles of behavior, measurements and theories of psychology.

T-SOC 312 Personality Development 3

This course is designed to help the student recognize the importance of the physical, intellectual, social and emotional dimensions of personality. Then the student is guided into an individual program of improvement.

T-NSG 301 Introduction to Medical-Surgical Nursing 5 (3-6)

The problem solving method is used as an approach to nursing care and begins with the student's understanding of man's basic needs and the problems which arise when these needs are not met. Scientific principles from the areas of of nursing, pharmacology and nutrition and their application are stressed. Through knowledge, technical skills and interpersonal relationship techniques, the student is able to provide patient-centered nursing care. Prerequisite: Admission to the Associate Degree Program in Nursing.

C-EH 102 English Composition II 3

Continuation of the study of composition, emphasizing interpretation and evaluation of expository, narrative and creative writing. Prerequisite: C-EH 101.

C-PC 202 Human Development 5

Development of the normal child and adolescent with consideration of the social, biological and cultural influences upon growth. Prerequisite: C-PC 201.

T-NSG 302 Medical-Surgical Nursing I 6 (3-9)

The introductory portion of this course is designed to increase the student's ability to recognize patients' reactions to illness, to observe basic processes of illness and to plan individualized nursing care. A study of the nursing needs of adolescents based upon the developmental tasks and major health problems of this group is then considered. Prerequisite: T-NSG 301; Prerequisite or Corequisite: C-PC 202.

C-EH 103 English Composition III 3

Further study in composition, emphasizing the research paper. Prerequisite: C-EH 102.

C-BY 150 General Bacteriology (Microbiology) 5 (3-4)

An introductory course in general bacteriology with a survey of microscopical plant and animal forms with emphasis upon the morphology, physiology and ecology of bacteria. The nature and activities of common microorganisms of humans, soil, water, food and milk. Prerequisite: C-BY 101 or consent.

C-SY 201 Introduction to Sociology 5

An analysis of the society and culture dealing with social organization, control, institutions, stratification, and social change.

T-NSG 303 Medical-Surgical Nursing II 6 (3-9)

A study of the nursing needs of young and middle aged adults based upon the developmental tasks and major health problems of these age groups. Concepts of group dynamics and their application to planning nursing care are included. Prerequisites: T-NSG 302 and C-PC 202.

T-CHEM 150 Chemistry 5 (4-2)

Basic chemistry is introduced briefly in order to aid the student in understanding the Organic and Biological phases which follow. Emphasis is placed upon those areas of chemistry involved in normal and abnormal cell functions. Various chemicals of the body are studied as they relate to specific physiological processes. Mathematical computations are limited to those necessary to understand laboratory reports, and develop a concept of the quantitative nature of chemistry.

T-NSG 305 Maternal and Child Health Nursing I 10 (4-18)

T-NSG 306 Maternal and Child Health Nursing II 10 (4-18)

A study of maternal and child care based on understanding of the reproductive and developmental cycles of mothers and children. Emphasis is placed on the concepts of family-centered care and on health teaching. Knowledge of the normal maternity cycle and growth and development of the child from infancy through pre-adolescence is used as a basis for recognition of the deviations from normal which may be produced by illness and hospitalization and for planning nursing care. Prerequisite: T-NSG 303, Corequisite: C-SY 203.

C-SY 203 Marriage and the Family 5

Study of the American family with attention given to courtship, marriage, family relationships and interdependencies, and social or cultural stresses emerging from contemporary family life. Prerequisite: C-SY 201.

T-NSG 307 Neuropsychiatric Nursing 10 (4-18)

A study of the nursing needs of patients with behavioral disorders due to mental or physical illness. Concepts of interpersonal relationships and mental health and their application in planning nursing care are included. Prerequisite: T-NSG 303.

C-SP 101 Fudamentals of Oral Communications 3

Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences, and vocabulary. Prerequisite: C-EH 101.

T-NSG 304 Medical-Surgical Nursing III 10 (4-18)

A study of the nursing needs of aging adults based upon the developmental tasks and major health problems of this age group. Concepts of progressive patient care and their application to planning nursing care are included. Prerequisite: T-NSG 303.

T-NSG 308 Trends in Nursing 3

A study of the major trends in modern nursing and their effects on nursing service and nursing education. Emphasis is placed on the responsibilities of the nurse as a member of the health team and as a citizen in the community. Corequisite: T-NSG 309.

T-NSG 309 Seminar in Nursing 11 (3-24)

A study in depth of those aspects of nursing which have been identified as being fundamental for providing patient-centered nursing care. Emphasis will be placed on group study and analysis of patient care problems. Prerequisites: T-NSG 305, 306, 307, 304; Corequisite: T-NSG 308.

SCIENTIFIC DATA PROCESSING

Data Processing is one of the fastest growing of the new occupations developing in our rapidly changing technological society. This relatively new occupation offers unlimited opportunities for technicians with good backgrounds in this highly technical field.

The occupational field of data processing offers a wide variety of activity with specialization possible in many of the areas. The industrial and business hierarchy includes systems and numerical analysts, programmers, coders, and machine operators. The greatest demand is for numerical and systems analysts.

DESCRIPTION OF PROGRAM

The program offered at Central Piedmont Community College is designed to develop an individual with the academic background necessary for analyst procedures. Three well-equipped laboratories, including two complete computer systems, give ample opportunity for students to learn techniques as well as write programs.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
T-MA	311	Numbering System and Boolean Algebra	5	0	5
T-DP	310	Functional Wiring Principles	4	6	7
T-BUS	309	Business Machines	0	4	2
T-ENG	301	Speed Reading	2	0	0
T-DP	311	Introduction to Data Processing	3	2	4
			14	12	18
SECOND QUARTER					
T-MA	301	Technical Mathematics	5	0	5
T-DP	312	Fundamentals of Programming	5	0	5
T-PHY	301	Physics: Properties of Matter	3	2	4
T-ISc	301	Industrial Organization and Management	3	0	3
T-ENG	302	Report Writing	3	0	3
			19	2	20
THIRD QUARTER					
T-MA	302	Technical Mathematics	5	0	5
T-DP	313	Business Programming	2	4	4
T-PHY	302	Physics: Work, Energy, Power	3	2	4
T-MA	314	Statistics	5	0	5
T-ENG	303	Technical Report Writing	3	0	3
			18	6	21
FOURTH QUARTER					
T-MA	303	Technical Mathematics	5	0	5
T-DP	314	Scientific Programming	2	4	4
T-PHY	303	Physics: Electricity	3	2	4
T-MA	315	Statistics	5	0	5
T-ENG	307	Fundamentals of Oral Communications	3	0	3
			18	6	21

Data Processing Technology—Scientific

Course Title			Course Hours Per Week Class	Lab.	Quarter Hours Credit
FIFTH QUARTER					
T-MA	304	Technical Mathematics	5	0	5
T-DP	315	Linear Programming and Critical Path Method	2	4	4
T-CHEM	301	Chemistry	3	2	4
T-SOC	302	Economics	3	0	3
T-ELEC	309	Data Processing Electronics	3	2	4
			16	8	20
SIXTH QUARTER					
T-MA	319	Differential Equations	5	0	5
T-CHEM	302	Chemistry	4	2	5
T-ELN	309	Introduction to Electronics	3	2	4
T-SOC	310	Applied Psychology	3	0	3
T-DP	316	Research Project	5	4	7
			20	8	24

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Lab.	Quarter Hours Credit
T-MA 311 Numbering System and Boolean Algebra	5	0	5

A cursory treatment of the base-ten numbering system; functional introduction to numbering systems with bases other than 10, transformation from one system to another; fundamental operation in systems other than the decimal; a detailed study of the binary system in relation to machine calculations; principles of Boolean Algebra and its contribution to digital devices and data processing.

T-DP 310 Functional Wiring Principles	4	6	7

The fundamental wiring necessary for basic machine functions of printing, punching, comparing and selecting. Laboratory experiments complement the theoretical aspects of this course.

T-BUS 309 Business Machines	0	4	2

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of 10-key adding machine, full-keyboard adding machine, calculator, posting and accounting machines, card punch, and card verifier.

T-ENG 301 Speed Reading	2	0	0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

T-DP 311 Introduction to Data Processing Systems	3	2	4

Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite to the detail study of particular computer problems. This course is a prerequisite for all programming courses.

T-MA 301 Technical Mathematics	5	0	5

The real number systems is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed.

T-DP 312 Fundamentals of Programming	5	0	5

Functions and capabilities of a specific data processing machine and tools and raw material are necessary. Programming drills, exercises, and case studies bridge the gap from the theoretical to the real world of data processing. Prerequisites: T-DP 310, T-DP 311.

T-PHY 301 Physics: Properties of Matter	3	2	4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

T-ISc 301 Industrial Organization and Management 3 0 3
A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management.

T-ENG 302 Report Writing 3 0 3
Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

T-MA 302 Technical Mathematics 5 0 5
A continuation of T-MA 301. Advanced algebraic and trigonometric topics, including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MA 301.

T-DP 313 Business Programming 2 4 4
The effective use of data processing equipment in meeting the information needs of business; utilizing the symbolic programming system in the solution of problems. This course guides the student through the stages in the evolution of a system. The scope of the system developed will vary from a modest payroll procedure to the total information system of a large and complex business. Prerequisites: T-DP 312, T-MA 301.

T-PHY 302 Physics: Work, Energy, Power 3 2 4
Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisite: T-PHY 301.

T-MA 314 Statistics 5 0 5
The theory of statistics and its application in modern business. Kinds of regularity that exist among random fluctuations. Experience in associating and using mathematical models to interpret physical phenomena and predicting the outcome of experiments related to practical business problems. Prerequisite: T-MA 301.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. Prerequisite: T-ENG 302.

T-MA 303 Technical Mathematics 5 0 5
The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MA 302.

T-DP 314 Scientific Programming 2 4 4
Designed to provide sufficient knowledge of programming systems concepts so that any specific system may be mastered with a minimum of instruction. Analyses, evaluations and minor modifications to such systems will be made. Individual phases of certain selected systems are treated in detail in order to teach advanced programming and logic decision techniques as applied in sophisticated systems. Prerequisites: T-DP 313, T-MA 302.

T-PHY 303 Physics: Electricity 3 2 4
Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: T-PHY 301, T-MA 302.

T-MA 315 Statistics 5 0 5
Practical experiences in the statistical solution of business problems through

the use of computers. Methods of organizing, presenting and interpreting data. Prerequisite: T-MA 314.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary.

T-MA 304 Technical Mathematics 5 0 5
More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations and Fourier series. Prerequisite: T-MA 303.

T-DP 315 Linear Programming and Critical Path Method 2 4 4
Lecture and case problems encompassing the scope and potential of using mathematical programming with computers to increase industrial efficiency. This course presents the critical path network technique of management planning, scheduling and control. Basic rules of network planning are presented with laboratory assignments designed to implement the theoretical aspects of the critical path method (CPM). Prerequisites: T-DP 314, T-MA 315.

T-CHEM 301 Chemistry 3 2 4
Study of the physical and chemical properties of substances; chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions, and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry. Prerequisite: T-MA 301.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-ELEC 309 Data Processing Electronics 3 2 4
This course will introduce the student to direct current theory and circuits as an aid to programming data processing equipment. An introduction to simple alternating current circuits will also be given.

T-MA 319 Differential Equations 5 0 5
Methods of solving first-order and simple higher order ordinary differential equations and linear differential equations with constant co-efficients; solution of differential equations by series; and numerical solutions of differential equations. Prerequisite: T-MA 318.

T-CHEM 302 Chemistry 4 2 5
Properties of acids, bases, salts, and solutions. Chemical and physical properties of selected inorganic elements are studied in detail. Fundamental topics in organic chemistry are introduced with emphasis on the aliphatic hydrocarbons. Laboratory work will consist of various inorganic preparations and the familiarization with carbon compounds and organic solvents. Prerequisite: T-CHEM 301.

T-ELN 309 Introduction to Electronics 3 2 4
A course which will introduce the student to fundamental electronic theory and circuits so that the student will better understand the operation of complex data processing equipment. Prerequisite: T-ELEC 309.

T-SOC 310 Applied Psychology 3 0 3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

T-DP 316 Research Project 5 4 7
Individual assignments in a carefully selected project will be made for each student during this quarter of work, providing an opportunity to initiate and carry out a project taken from outside the school. This course places the responsibility upon the student to solve a significant problem with minimum of teacher assistance. Prerequisites: T-DP 315, T-DP 314.

TRAFFIC AND TRANSPORTATION

The movement, warehousing and handling of all types of goods (from the smallest egg to the largest turbine) by railroad, trucks or air from and to all areas of the world is the basis for the transportation industry. These industries are among this area's largest employers, whether in single or multi-unit companies. They play a major role in our economic life and, through their services, keep the industrial-retail-wholesale-agriculture complex functioning on split-second timing.

Services in the field of Traffic and Transportation are varied. They are performed in such areas as those of terminal manager; rate, tariff, and claim personnel; yard, sales and service engineers; packaging and materials handling specialists; office personnel employed by water, rail, truck, and air, groups or concerns in the industrial-wholesale-retail-agriculture fields serviced by them. This area offers a larger number of opportunities for new employees or for self-study promotion by present employees.

DESCRIPTION OF PROGRAM

The traffic and transportation program at Central Piedmont Community College is modern, practical and complete. When taken on a full-time basis it may be completed in six quarters or in a proportionately-longer period of time on a part-time schedule. Relating areas of study will assist in rounding out the student to provide a more complete insight in dealing with people and in overall business functioning. The traffic and transportation program is designed to (1) develop the student's knowledge and understanding of the fundamental and practical aspects dealing specifically in this field; (2) develop operative skills that will enable the student to progress in an upgrading program within the industry and in an area of his interest; (3) familiarize the student with the importance of this field, its relationship to other areas, and the manner in which he can play a part in the future growth.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course		Title	Course Hours Per Week Class	Lab.	Quarter Hours Credit
FIRST QUARTER					
T-ENG	302	Report Writing	3	0	3
T-BUS	302	Typewriting (or Elective)*	2	3	3
T-MA	310	Business Mathematics	3	0	3
T-BUS	301	Introduction to Business	3	0	3
T-BUS	351	Business Law	3	0	3
T-BUS	317	Sales Development	3	0	3
			17	3	18
SECOND QUARTER					
T-ENG	303	Technical Report Writing	3	0	3
T-BUS	320	Accounting	5	2	6
T-BUS	352	Business Law	3	0	3
T-SOC	302	Economics	3	0	3
T-BUS	378	Traffic and Transportation	3	0	3
			17	2	18

Traffic and Transportation

Course		Title	Course Hours Per Week Class	Lab.	Quarter Hours Credit
THIRD QUARTER					
T-ENG	306	Letter Writing	3	0	3
T-BUS	355	Interpreting Accounting Records	3	0	3
T-BUS	363	Economics of Transportation	3	0	3
T-BUS	385	ICC Law	3	0	3
T-BUS	379	Traffic and Transportation	3	0	3
T-BUS	390	Motor Carrier	3	0	3
			18	0	18
FOURTH QUARTER					
T-ENG	307	Fundamentals of Oral Communications	3	0	3
T-BUS	364	Business Finance	3	0	3
T-DP	311	Introduction to Data Processing Systems	3	2	4
T-BUS	386	ICC Laws	3	0	3
T-BUS	380	Traffic and Transportation	3	0	3
T-BUS	391	Motor Carrier	3	0	3
			18	2	19
FIFTH QUARTER					
T-ENG	304	Public Speaking	3	0	3
T-BUS	335	Business Management	3	0	3
T-BUS	381	Traffic and Transportation	3	0	3
T-BUS	387	ICC Law	3	0	3
T-BUS	395	Traffic—Claims	3	0	3
T-SOC	310	Applied Psychology	3	0	3
			18	0	18
SIXTH QUARTER					
T-BUS	368	Taxes	3	0	3
T-BUS	333	Personnel Management	3	0	3
T-BUS	398	Materials Handling	3	0	3
T-BUS	399	Traffic Management	3	0	3
		Elective **	6	0	6
			18	0	18

* Elective courses must be selected from the business education curriculum.
** Elective courses must be selected from technical curricula.

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Lab.	Quarter Hours Credit
T-ENG 302 Report Writing	3	0	3

Intensive study of and practice in effective expository writing principles of grammar, punctuation and organization.

T-BUS 302 Typewriting	2	3	3

The touch system is taught. The proper manipulation of the keyboard and the operation of the machine are given special attention. (Not required if student had one year of high school.)

T-MA 310 Business Mathematics	3	0	3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes and pertinent uses of mathematics in the field of business.

T-BUS 301 Introduction to Business	3	0	3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management. Prerequisite: (To be taken in 1st quarter if possible.)

T-BUS 351 Business Law 3 0 3
A general course designed to acquaint the student with certain fundamentals and principles of business law, covering contracts, negotiable instruments, and agency.

T-BUS 317 Sales Development 3 0 3
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling.

T-ENG 303 Technical Report Writing 3 0 3
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports and using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the course. Prerequisite: T-ENG 302.

T-BUS 320 Accounting 5 2 6
Principles, techniques and tools of accounting for understanding the mechanics of accounting — collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

T-BUS 352 Business Law 3 0 3
Includes the study of bailments, sales, risk-bearing, partnership-corporation mortgages and property. Prerequisite: T-BUS 351.

T-SOC 302 Economics 3 0 3
Basic economics with attention to central problems of price, competition and money; supply and demand; business organizations; firm and family income; labor and industrial relations; government and the economy; gross national product; relationship of income to expenditures; business cycles.

T-ENG 306 Letter Writing 3 0 3
A course in writing purposeful, correct letters, telegrams, and minutes of meetings through experience in analyzing problem situations. Particular attention to letters involving credit, collections, complaints, orders, acknowledgments, remittances, and inquiry are also included in this course. Prerequisite: T-ENG 302.

T-BUS 355 Interpreting Accounting Records 3 0 3
Designed to aid the student in developing a "use understanding" of accounting records, reports, and financial statements.

T-ENG 304 Public Speaking 3 0 3
Study of the mechanics of speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous, impromptu, prepared and memorized material. Prerequisite: T-ENG 307, or consent of instructor.

T-BUS 335 Business Management 3 0 3
Principles of business management including overview of major functions of management, such as planning, organizing, actuating, and controlling. Clarification of the decision making function versus the operating function. Role of management in business-qualifications and requirements.

T-SOC 310 Applied Psychology 3 0 3
Procedures of building an efficient, enthusiastic business team; the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

T-ENG 307 Fundamentals of Oral Communications 3 0 3
Principles of effective communication with emphasis upon self-expression in conversation, interviewing, delegating and accepting, understanding, listening, questioning, conferences and vocabulary. Prerequisite: T-ENG 302.

T-BUS 364 Business Finance 3 0 3
Financing of business units, as individuals, partnerships, corporations and trusts. A detailed study is made of the organization, management and financing of businesses.

T-DP 311 Introduction to Data Processing Systems 3 2 4
Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite to the detailed study of particular computer problems. This course is a prerequisite for all programming courses.

Traffic and Transportation

T-BUS 368 Taxes 3 0 3
A study and application of federal and local state income taxes to various businesses and business conditions, including the following taxes: payroll, intangible, capital gain, sales, excise and inheritance income, and real estate.

T-BUS 333 Personnel Management 3 0 3
Covers principles of organization and management of personnel; procurement, placement, training, performance checking, supervision, remuneration, labor relations, fringe benefits, and security.

T-BUS 363 Economics of Transportation 3 0 3
The economic aspects of transportation. Complete discussion from the earliest form of basic transportation to our present complex system of transportation. In addition to the historical approach, consideration is given to the economic factors involved in plant location and principles involved in present day developments of transportation.

T-BUS 378 Introduction to Traffic and Transportation 3 0 3
This is an introductory course, covering the American transportation system, developments leading to the legislative supervision of the carriers, freight traffic territories, traffic flow, freight classifications, freight rates and freight claims.

T-BUS 379 Traffic and Transportation 3 0 3
A study of the construction and filing of tariffs, freight rates, terminal facilities, storage, weights, routing, warehousing, and material handling. Prerequisite: T-BUS 378.

T-BUS 380 Traffic and Transportation 3 0 3
Stresses through routes and rates, milling in transit, technical tariff and rate interpretation, overcharges and undercharges, loss and damage, import and export tariff, classification committee procedure, and rate committee procedures. Prerequisite: T-BUS 379.

T-BUS 381 Traffic and Transportation 3 0 3
To acquaint the student with the application of the Interstate Commerce Act to practical transportation as well as the general procedure of requesting changes before the Interstate Commerce Commission. Prerequisite: T-BUS 380.

T-BUS 390 Motor Carrier 3 0 3
An introduction to special problems relating to tariffs and rates of motor carriers.

T-BUS 391 Motor Carrier 3 0 3
A continuation of special problems relating to tariffs, rates, circulars, pertaining to the Motor Carrier field. Prerequisite: T-BUS 390.

T-BUS 395 Traffic—Claims 3 0 3
Rights and liabilities of carriers, consignors, and consignees; claim procedures, settlements, and prevention.

T-BUS 398 Materials Handling 3 0 3
A study of basic containers and equipment, packaging and material protection, standardization, warehousing, traffic and shipping. The various analytical approaches used in formulating materials handling improvements in existing or proposed operations are covered.

T-BUS 385 ICC Law 3 0 3
A thorough analysis of the Interstate Commerce Act; a review of history of Act and related acts. Prerequisite: T-BUS 381 or consent of DEPARTMENT.

T-BUS 386 ICC Law 3 0 3
A detailed study is made of the procedural policy involved in appearing before the Interstate Commerce Commission. Prerequisite: T-BUS 385.

T-BUS 387 ICC Law 3 0 3
Case studies of applications of the Interstate Commerce Act. Prerequisite: T-BUS 386.

T-BUS 399 Traffic Management 3 0 3
Develops the purpose, function and operation of traffic management and illustrates the differences in various areas of traffic; also shows relationship to other business operations. Prerequisite: (Approval of Department).

Diploma Programs

AUTO BODY REPAIR

The field of automotive body repair and painting requires many more well-trained people to meet the growing demand for the many skills in this area of employment. People in this field with a background of knowledge and skill have excellent opportunities for jobs with good salaries. Many of these craftsmen, after gaining additional experience, go on to open their own businesses or become body shop foremen, supervisors or managers.

DESCRIPTION OF PROGRAM

This program at the Central Piedmont Community College devotes much of the students' time in the shop to the learning of the skills and practicing of these skills on car bodies and components. Every attempt is made to make these practical experiences as similar to the actual on-the-job work as possible. The large shop and excellent equipment make it an ideal way to prepare for entry into an occupation that offers many job opportunities.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Shop	
TR-AUTO	111	Auto Body Repair	4	12	8
TR-MA	120A	Shop Mathematics	3	0	3
TR-PHY	110	Shop Science I: Matter and Electricity	2	2	3
TR-ENG	101	Speed Reading	2	0	0
TR-MECH	112	Welding	0	3	1
			11	17	15
SECOND QUARTER					
TR-AUTO	112	Auto Body Repair	4	12	8
TR-WELD	105	Welding	0	3	1
TR-MA	120B	Shop Mathematics	3	0	3
TR-PHY	111	Shop Science II: Mechanics and Heat	2	2	3
TR-ENG	102	Shop Communications	2	0	2
			11	17	17

Auto Body Repair

Course Title			Course Hours Per Week		Quarter Hours Credit
THIRD QUARTER			Class	Shop	
TR-AUTO	113	Metal Finishing and Painting	4	12	8
TR-SOC	101	Human Relations	2	0	2
TR-DD	121	Blueprint Reading	3	0	3
TR-AUTO	115	Trim, Glass and Radiator Repair	2	6	4
			11	18	17
FOURTH QUARTER					
TR-AUTO	114	Body Shop Applications	3	21	10
TR-SOC	103	Management Procedures	3	0	3
			6	21	13

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week: Class	Shop	Quarter Hours Credit
TR-AUTO 111 Auto Body Repair	4	12	8

Basic principles of automobile construction, design, and manufacturing are covered in the beginning of the course. A thorough study of angles, crown and forming of steel into the complex contour of the present day vehicles. The practical application is to have the student apply the first principal of straightening, aligning and painting of damaged areas.

Course Title	Class	Shop	Quarter Hours Credit
TR-MA 120A Shop Mathematics	3	0	3

Number theory, operations with common fractions and applications, operations with decimal fractions with applications, simple word problems involving fractions, determination of unknown dimensions on mechanical drawings. Also operations with signed numbers, definitions in algebra, grouping symbols, order of operations, axioms used in solving equations, solution of simple first degree equations, evaluation of a formula, ratio and proportion, compound ratios, tapers, and percentage. Solution of simple second degree equations by formula.

Course Title	Class	Shop	Quarter Hours Credit
TR-PHY 110 Shop Science I: Matter and Electricity	2	2	3

Introductory course in physics and its applications. Covers systems of measurement and properties of solids, liquids and gases. Much emphasis is placed upon the principles of electricity such as electron theory, magnetism and electromagnetism; the production, transmission, distribution, measurement and specific applications of electrical energy constitute major areas of study.

TR-ENG 101 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-MECH 112 Welding 0 3 1

Welding demonstrations by the instructor and practice by students in the oxyacetylene welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding, bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

TR-AUTO 112 Auto Body Repair 4 12 8

A thorough study of the requirements of a metal worker, the use of essential tools, forming fender flanges and beads, and straightening typical damage. It is here that the student begins acquiring the skill, learning dexterity, and shaping angles, crowns, and contour of the metal of the body and fenders. More difficult types of metal working and painting are assigned. Prerequisite: TR-AUTO 111, TR-MECH 112.

TR-WELD 105 Welding 0 3 1

Welding practices on material applicable to the installation of body panels and repairs to doors, fenders, hoods, and deck lids. Student runs beads, does butt and fillet welds and performs all tests to detect strength and weaknesses of welded joints. Safety procedures are emphasized throughout the course. Prerequisite: TR-MECH 112.

TR-MA 120B Shop Mathematics 3 0 3

Operations with monomials and polynomials, removing a common factor, more advanced analysis of a formula, solution of a formula for an indicated unknown and evaluation of the unknown. Includes an introduction to geometry and definitions. Instructor demonstrates and explains by examples about 40 selected propositions in geometry, with emphasis on applications of the propositions to problem solving on mechanical drawings. Formulas for areas of plane figures, surface areas of solids, and volumes of solids are developed with applications to problem solving. Prerequisite: TR-MA 120-A

TR-PHY 111 Shop Science II: Mechanics and Heat 2 2 3

Principles of force, motion, work, energy, power, and mechanisms' mechanical advantage are treated extensively. The study of heat production, transmission, and its conversion into work are covered. Heat removal (refrigeration) is also introduced. Prerequisite: TR-PHY 110.

Auto Body Repair

TR-ENG 102 Shop Communications 2 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

TR-AUTO 113 Metal Finishing and Painting 4 12 8

Development of the skill to shrink stretched metal, soldering and leading, and preparation of the metal for the painter. Straightening of doors, hoods, and deck lids, fitting and aligning are emphasized. Refinishing includes painting a fender or panel, spot repairs, and complete vehicle painting. The use and application of required power tools complete this phase. Prerequisites: TR-AUTO 112, TR-WELD 105.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

TR-DD 121 Blueprint Reading 3 0 3

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures and notes.

TR-AUTO 115 Trim, Glass and Radiator Repair 2 6 4

Principles of removal and installation of all phases of interior trim are applied. Cutting, sewing, and installing headlinings, seat covers and door trim panels are covered in class and in their practical application. Glass removal, cutting, fitting and installation are covered in detail. A thorough knowledge of the engine cooling system, repairs made necessary by accident and testing to insure normal engine cooling operation. Advanced painting of trim parts and accesories requiring extreme care and skill. Prerequisite: TR-WELD 112.

TR-AUTO 114 Body Shop Applications 3 21 10

General introduction and instruction in the automotive frame and front end suspension systems, the methods of operation and control and safety of vehicle; unit job application covers the actual straightening of frame and front wheel alignment. A general shop application involves the application of all phases of training received. Repair order writing, parts purchasing, owner contacts, estimates of damage, and developing the repair order for financing with final settlement with car owner. Prerequisites: TR-AUTO 115, TR-PHY 111, TR-DD 121.

TR-SOC 103 Management Procedures 3 0 3

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

AUTOMOTIVE MECHANICS

The modern automobile is a complicated machine and requires a highly-skilled, well-trained man to properly repair and maintain it for operation at peak efficiency. Automobile mechanics make up the largest service and repair group in the U. S., requiring over 10,000 new men every year. Wages are good and opportunities are excellent for the man who is willing to work and anxious to learn.

DESCRIPTION OF PROGRAM

The Automotive Mechanics program at the Central Piedmont Community College is designed to provide the future craftsman with a well-planned program of operational skills and theory necessary to become an automotive mechanic. A working knowledge in the tune-up, overhaul, repair and replacement of parts of the automotive engine; trouble shooting and repair of electrical equipment; overhaul and replacement of parts in conventional and automatic transmissions and preparation in other vital areas in the repair and servicing of the modern automobile are emphasized.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Shop	
TR-AUTO	121	Automotive Engines	4	12	8
TR-ENG	101	Speed Reading	2	0	0
TR-MA	120A	Shop Mathematics	3	0	3
TR-MECH	112	Welding	0	3	1
TR-PHY	110	Shop Science I: Matter and Electricity	2	2	3
			11	17	15
SECOND QUARTER					
TR-AUTO	122E	Electricity and Ignition	4	9	7
TR-AUTO	122F	Carburetor and Fuel Systems	2	3	3
TR-MA	120B	Shop Mathematics	3	0	3
TR-PHY	111	Shop Science II: Mechanics and Heat	2	2	3
TR-ENG	102	Shop Communications	2	0	2
			13	14	18

Automotive Mechanics

Course Title			Course Hours Per Week		Quarter Hours Credit
THIRD QUARTER			Class	Shop	
TR-AUTO	123	Automotive Chassis and Suspension	2	6	4
TR-SOC	101	Human Relations	2	0	2
TR-AUTO	124	Automotive Power Train Systems	4	12	8
TR-DD	121	Blueprint Reading	3	0	3
			11	18	17
FOURTH QUARTER					
TR-AUTO	125G	Auto Garage	0	15	5
TR-AUTO	125T	Auto Testing	1	3	2
TR-AHR	101	Automotive Air Conditioning	1	3	2
TR-SOC	103	Management Procedures	3	0	3
			5	21	12

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Shop	Quarter Hours Credit
TR-AUTO 121 Automotive Engines	4	12	8

Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in automotive repair work. Study of the construction and operation of components of automotive engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts; fuel and exhaust systems; cooling systems; proper lubrication; and methods of testing, diagnosing and repairing.

TR-ENG 101 Speed Reading	2	0	0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-MA 120A Shop Mathematics	3	0	3

Number theory, operations with common fractions and applications, operations with decimal fractions with applications, simple word problems involving fractions, determination of unknown dimensions on mechanical drawings. Also operations with signed numbers, definitions in algebra, grouping symbols, order of operations, axioms used in solving equations, solution of simple first degree equations, evaluation of a formula, ratio and proportion, compound ratios, tapers, and percentage. Solution of simple second degree equations by formula.

TR-MECH 112 Welding 0 3 1

Welding demonstrations by the instructor and practice by students in the oxy-acetylene welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding, bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

TR-PHY 110 Shop Science I: Matter and Electricity 2 2 3

Introductory course in physics and its applications. Covers systems of measurement, properties of solids, liquids and gases. Much emphasis is placed upon the principles of electricity, such as electron theory, magnetism and electromagnetism; the production, transmission, distribution, measurement, and specific applications of electrical energy constitute major areas of study.

TR-AUTO 122E Electricity and Ignition 4 9 7

A thorough study of the electrical system of the automobile, battery cranking mechanism, generator, ignition, accessories, and wiring. Special tools and testing equipment for the electrical system. Prerequisites: TR-AUTO 121, TR-PHY 110, TR-MA 120A.

TR-AUTO 122F Carburetor and Fuel Systems 2 3 3

A thorough study of the fuel system of the automobile including fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools and testing equipment for the fuel systems. Prerequisites: TR-AUTO 121, TR-MA 120A.

TR-MA 120B Shop Mathematics 3 0 3

Operations with monomials and polynomials, removing a common factor, more advanced analysis of a formula, solution of a formula for an indicated unknown and evaluation of the unknown. Includes an introduction to geometry and definitions. Instructor demonstrates and explains by examples about 40 selected propositions in geometry, with emphasis on applications of the propositions to problem solving on mechanical drawings. Formulas for areas of plane figures, surface areas of solids, and volumes of solids are developed with applications to problem solving. Prerequisite: TR-MA 120A.

TR-PHY 111 Shop Science II: Mechanics and Heat 2 2 3

Principles of force, motion, work, energy, power, and mechanisms' mechanical advantage are treated extensively. The study of heat production, transmission, and its conversion into work are covered. Heat removal (refrigeration) is also introduced. Prerequisite: TR-PHY 110.

TR-ENG 102 Shop Communications 2 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Automotive Mechanics

TR-AUTO 123 Automotive Chassis and Suspension 2 6 4

Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, steering and braking systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, front end, types and servicing of brakes. Prerequisite: TR-AUTO 122.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organizations, with special emphasis on the operating responsibilities of good management.

TR-AUTO 124 Automotive Power Train Systems 4 12 8

Principles and functions of automotive power train systems; clutches, transmission, gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing and repair. Prerequisites: TR-PHY 111, TR-MA 120A, TR-AUTO 122F.

TR-DD 121 Blueprint Reading 3 0 3

Intrepretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures and notes.

TR-AUTO 125G Auto Garage 0 15 5

Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Trouble-shooting of automotive systems, providing a full range of testing, adjusting, repairing and replacing experiences. Prerequisite: TR-AUTO 123.

TR-AUTO 125T Auto Testing 1 3 2

The necessary procedures are studies in determining the troubles in automobiles which are brought to a garage. A full range of analysis and testing methods is developed in order to quickly troubleshoot an automobile. Understanding the test equipment and procedures will be stressed. Prerequisite: TR-AUTO 123.

TR-AHR 101 Automotive Air Conditioning 1 3 21

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system. Prerequisite: TR-PHY 111.

TR-SOC 103 Management Procedures 3 0 3

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

DENTAL ASSISTANT

The primary function of the dental assistant is to serve as the chairside assistant to the dentist where she plays an active and integral role in dental procedures. For example, she prepares patients for treatment, sets out instruments in order they are to be used, keeps the operation field clear during treatment, mixes filling materials and dental cements and passes these materials and instruments to the dentist as he needs them.

The trained dental assistant also checks equipment, sterilizes instruments, engages in laboratory work such as making study models of teeth and casting inlays and processes x-ray films and mounts them in appropriate holders.

In many offices the dental assistant also serves as receptionist and office manager, schedules appointments, and keeps records.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Comunity College includes instruction in dental anatomy and physiology, bacteriology, pharmacology, oral pathology, dental materials, chairside assisting, typing, human relations, records, etc. A large portion of the student's time is spent in laboratory work and clinical experiences.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Lab.	Credit
TR-DEN	101	Dental Science	3	0	3
TR-DEN	112	Anatomy and Physiology	3	0	3
TR-DEN	111	Dental Materials	4	8	8
TR-ENG	102	Shop Communications	2	0	2
TR-SOC	101	Human Relations	2	0	2
TR-ENG	101	Speed Reading	2	0	0
			16	8	18

Dental Assistant

Course Title			Class	Lab.	Quarter Hours Credit
SECOND QUARTER					
TR-DEN	114	Dental Office Management	5	2	6
TR-DEN	115	Sterilization, Equipment Care and Supplies	2	2	3
TR-DEN	116	Clinical Orientation	5	8	9
TR-ENG	103	Report Writing	3	0	3
			15	12	21
THIRD QUARTER					
TR-DEN	117	Advanced Clinical Orientation	4	8	8
TR-DEN	105	Dental First Aid	2	0	2
TR-ENG	104	Public Speaking	3	0	3
TR-BUS	110	Accounting	2	4	4
TR-BUS	109	Typing	2	2	3
			13	14	20
FOURTH QUARTER					
TR-DEN	118	Clinical Practice	6	24	18
			6	24	18

Course Hours Per Week: Class, Lab.

COURSE DESCRIPTIONS

Course Title	Class	Lab.	Quarter Hours Credit
TR-DEN 101 Dental Science	3	0	3

Course Hours Per Week: Class, Lab.

This course is designed to show how bacteriology and dental health are related, and to demonstrate techniques for successfully coping with the bacteriological problems that arise in the dental office. A portion of the course is devoted to (1) common drugs and medicaments used in the dental office: their indications, dosage, methods of administration and storage; and (2) nutrition as applied to dentistry.

TR-DEN 112 Anatomy and Physiology	3	0	3

A lecture course designed to develop a knowledge and understanding of the basic structures surrounding the teeth, formation of the primary and permanent dentition, basic anatomy of individual teeth and application of this to the carving of restorative patterns. The general anatomy of the body and the basic concepts of the normal functions of body systems are also discussed.

TR-DEN 111 Dental Materials 4 8 8

A study of the composition and source of materials employed in dentistry and their behavior under various treatments. The dental assistant student learns through lectures, demonstrations and laboratory exercises to identify and prepare these materials for any of the routine dental procedures in the general practice of dentistry and in the specialties of the dental profession.

TR-ENG 102 Shop Communications 2 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

TR-ENG 101 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-DEN 114 Dental Office Management 5 2 6

This course presents the objectives and responsibilities of the dental assistant in practice dental office procedures, e.g., integral activities of the business office, operatory and laboratory; ethics and laws governing the profession; and applied psychology in patient management as related to both child and adult patient.

TR-DEN 115 Sterilization, Equipment Care and Supplies 2 2 3

This course covers: Identification, uses, operation and care of dental equipment, both major and minor; aseptic procedures and sterilization techniques; dental supply maintenance; inventory methods; procurement, storage and distribution of all supplies necessary in the dental office. Prerequisites: TR-DEN 101 and TR-DEN 111.

TR-DEN 116 Clinical Orientation 5 8 9

This course is designed to develop a knowledge and understanding of functions required of the dental assistant in the operatory—chairside procedures and techniques, instruments and materials ready and available in proper sequence in both general and specialized areas of dentistry. Lectures, demonstrations and clinical practice techniques are used to teach the techniques of exposing, processing, and mounting intraoral roentgenograms, the proper operation of the dental X-ray machine along with safety measures and its radiation hazards. Prerequisites: TR-DEN 111 and TR-DEN 112.

TR-ENG 103 Report Writing 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

TR-DEN 117 Advanced Clinical Orientation 4 8 8

Continuation of TR-DEN 116 plus limited chairside assisting with dentist and patient. Prerequisite: Third Quarter standing in the Dental Assistant Program.

TR-DEN 105 Dental First Aid 2 0 2

This course is designed to acquaint the dental assistant student with the various emergencies in the dental office and teach the dental aspects of general first aid so that she may prepare for and assist the dentist in handling emergencies. Prerequisite: Third Quarter standing in Dental Assistant Program.

TR-ENG 104 Public Speaking 3 0 3

Study of the mechanics of speech; adaptation of method to purpose in speaking; preparation of specific kinds of speeches; presentation of extemporaneous, impromptu, prepared and memorized material.

TR-BUS 110 Accounting 2 4 4

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting — collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

TR-BUS 109 Typing 2 2 3

Required of all students who have had no previous typing. The touch system is taught. The proper manipulation of the keyboard and the operation of the machine are given special attention.

TR-DEN 118 Clinical Practice 6 24 18

Practical application of the basic skills of the dental assistant program through clinical practice. Prerequisite: Fourth Quarter standing in Dental Assistant Program.

HEATING, AIR CONDITIONING, AND REFRIGERATION

The growing use of air conditioning and refrigeration equipment as well as complicated heating systems throughout the nation provides many job opportunities for skilled mechanics who install and repair such equipment in office buildings, factories, homes, food stores, restaurants, theaters, churches, and other establishments.

A great number of these skilled people are employed by business concerns which specialize in the repair and maintenance of commercial, industrial, and home air conditioning, refrigeration, and heating equipment.

Employers prefer to hire men who have a background of knowledge and skill in the field and will then give them the opportunity to gain additional experience on the job while earning good wages.

Thousands of trained men to install, maintain, and repair heating, air conditioning, and refrigeration equipment will be needed in the next ten years to meet the demand in this field.

DESCRIPTION OF PROGRAM

The heating, air conditioning and refrigeration program at the Central Piedmont Community College is designed to prepare a person for employment in this field. The students learn theory and also spend a large amount of time in a modern laboratory with up-to-date equipment. Necessary courses in mathematics, science and others are included in the program.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
			Class	Shop	Credit
FIRST QUARTER					
TR-AHR	102	Refrigeration Principles and Service	4	12	8
TR-DD	121	Blueprint Reading	3	0	3
TR-PHY	110	Shop Science I: Matter and Electricity	2	2	3
TR-MA	120A	Shop Mathematics	3	0	3
TR-ENG	101	Speed Reading	2	0	0
TR-SOC	101	Human Relations	2	0	2
			16	14	19
SECOND QUARTER					
TR-AHR	107	Commercial Refrigeration and Cooling Systems	4	12	8
TR-DD	116	Applied Drafting	3	0	3
TR-PHY	111	Shop Science II: Mechanics and Heat	2	2	3
TR-MA	120B	Shop Mathematics	3	0	3
TR-AHR	113	Heat Loads and Losses	4	0	4
			16	14	21
THIRD QUARTER					
TR-AHR	118	Duct Design and Installation	4	9	7
P-MA	801	Geometry and Right Triangle Trigonometry	5	0	5
TR-AHR	116	Oil Burner Installation and Service	2	3	3
TR-AHR	111	Automatic Controls	2	3	3
TR-MECH	112	Welding	0	3	1
			13	18	19

Heating, Air Conditioning and Refrigeration

Course Title			Course Hours Per Week Class	Shop	Quarter Hours Credit
FOURTH QUARTER					
TR-AHR	117	Gas, Electric and Liquid Heat	4	12	8
TR-AHR	114	All Weather Systems	2	3	3
TR-SOC	103	Management Procedures	3	0	3
TR-ENG	102	Shop Communications	2	0	2
TR-AHR	115	Estimating	4	0	4
			15	15	20

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	Shop	Quarter Hours Credit
TR-AHR 102 Refrigeration Principles and Service	4	12	8

This course consists of lectures, discussions and demonstrations. Many fields are covered including essential terminology, laws of refrigeration, physical and chemical effects, materials and tools. The compression system, compressor construction, refrigerants, controls, absorption systems, and hermetic units are a major portion of the course. Practice will be given in the use of tools in basic refrigeration jobs such as tube bending, flaring, soldering, refrigerant weighing and other service jobs. Much time is spent in actual refrigeration service practice. Discussions, demonstrations and practice will take place on residential cabinets using conventional, hermetic and absorption systems. Controls, system maintenance and system replacement will be stressed. Typical service problems will be worked out by each student. Complete rebuilding of domestic refrigerators will be undertaken.

TR-DD 121 Blueprint Reading 3 0 3

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures and notes.

TR-PHY 110 Shop Science I: Matter and Electricity 2 2 3

Introductory course in physics and its applications. Covers systems of measurement and properties of solids, liquids and gases. Much emphasis is placed upon the principles of electricity, such as electron theory, magnetism and electromagnetism; the production, transmission, distribution, measurement and specific applications of electrical energy constitute major areas of study.

TR-MA 120A Shop Mathematics 3 0 3

Number theory, operations with common fractions and applications, operations with decimal fractions with applications, simple word problems involving fractions, determination of unknown dimensions on mechanical drawings. Also operations with signed numbers, definitions in algebra, grouping symbols, order of operations, axioms used in solving equations, solution of simple first degree equations, evaluation of a formula, ratio and proportion, compound ratios, tapers, and percentage. Solution of simple second degree equations by formula.

TR-ENG 101 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

TR-AHR 107 Commercial Refrigeration and Cooling Systems 4 12 8
This course consists of study, demonstration and practice in the installation and service of commercial refrigeration systems. The various commercial applications of refrigeration are covered in classroom discussion before actual practice is given. The units covered include commercial cabinets, reach-in cabinets, walk-in coolers, display cases, frozen food cabinets, ice cream cabinets, water coolers, ice makers, and other industrial applications. All standard types of compressors, condensers, coils, valves and controls are studied. Various systems are installed and typical service problems worked out. Cooling system installations and service practice on the various types of air cooled and water cooled conditioning systems will be taught. Types of units used will include self-contained and remote air cooled residential and small commercial units, water cooled units, water towers, chilled water systems, heat pumps and automotive systems. Service of air movement systems and installation and service of standard controls are stressed. Service and storage of window units are included. Prerequisites: TR-AHR 102, TR-PHY 110. Corequisites: TR-MA 120B, TR-DD 121.

TR-DD 116 Applied Drafting 3 0 3
A study of the prints of the air conditioning trade such as machine prints, exploded prints, wiring schematics, floor plans and elevations, conditioning and equipment layouts constitutes a major portion of this course. Practice in shop sketching, isometric sketching and equipment layouts on prints or tracings is part of the course. Special attention is given to shop sketches of equipment placement and heating distribution systems. It is expected that each student will become familiar with the prints of the trade, will become adept at reading them, and will be able to produce the necessary shop sketches. Prerequisite: TR-DD 121.

TR-PHY 111 Shop Science II: Mechanics and Heat 2 2 3
Principles of force, motion, work, energy, power and mechanisms' mechanical advantage are treated extensively. The study of heat production, transmission, and its conversion into work is covered. Heat removal (refrigeration) is also introduced. Prerequisite: TR-PHY 110.

TR-MA 120B Shop Mathematics 3 0 3
Operations with monomials and polynomials, removing a common factor, more advanced analysis of a formula, solution of a formula for an indicated unknown and evaluation of the unknown. Includes an introduction to geometry and definitions. Instructor demonstrates and explains by examples about 40 selected propositions in geometry, with emphasis on applications of the propositions to problem solving on mechanical drawings. Formulas for areas of plane figures, surface areas of solids, and volumes of solids are developed with applications to problem solving.

TR-AHR 113 Heat Loads and Losses 4 0 4
In this course the history, theory and factors affecting air conditioning are studied and discussed. The course will cover history of air conditioning, terminology, temperature measurement, air movement, humidity, psychometric properties, comfort zone, effective temperature, ducts, air diffusion, air cleaning ozone and testing instruments. Many topics are studied including heat loads, heat leakage, coil and condensing unit capacities, coil types and design, coil usage, coil capacities, cooling loads, latent heat, specific heat, motor sizing and tubing sizing. Heat loss and gains through various structures and heat and cooling needed of various structures and in the selection of equipment to meet these needs. Load distribution, both air and liquid, is studied, and systems are designed to accomplish proper distribution. This course should be very closely correlated with the drafting course. Prerequisites: TR-MA 120A, TR-AHR 102, TR-DD 121, TR-PHY 110. Corequisites: TR-MA 120B, TR-PHY 111, TR-AHR 107.

TR-AHR 118 Duct Design and Installation 4 9 7
The student is introduced to the sheet metal shop with its rules and regulations concerning safety and workmanship. He learns to recognize and use safely the various hand tools and machines of the trade. Hand, machine and fastening operations are correlated with flat layout and parallel line development in the formation of pipe intersection, straight duct, elbows, offsets and reducers as used

in the conditioning trade. The student is given practice in fabrication of duct systems closely correlated with the layouts as designed in the drafting section. Instruction and practice are given in radial and triangulation development as used in the fabrication of duct systems and fittings necessary to conditioning systems. Working conditioning systems will be designed by each student. Corequisites: TR-DD 116, TR-MA 120B, TR-AHR 113, TR-PHY 111.

P-MA 801 Geometry and Right Triangle Trigonometry 5 0 5
Logarithms are taught as a computational aid. Review of more important propositions in geometry. Theory of right triangle trigonometry. Application of right triangle trigonometry to the solution of mechanical drawing problems.

TR-AHR 116 Oil Burner Installation and Service 2 3 3
This course involves study and practice in the installation and servicing of equipment using high pressure, low pressure, rotary and vaporizing burners. The installation and service of various oil burning equipment controls are studied. Actual practice is given in "troubleshooting" servicing of oil burners, fans, pumps and their controls under typical working conditions. Service department stock, tools and procedure should be integral parts of the instruction. Prerequisite: TR-AHR 107. Corequisites: TR-MA 120B, TR-PHY 111.

TR-AHR 111 Automatic Controls 2 3 3
This section is designed to prepare the student for the study of heating and cooling controls. The fundamentals of controls, definitions, fundamentals of measurement, electric controls, pneumatic controls, and controls for air conditioning are covered in theory so they may be applied in the laboratory section. Practical application will be given in zone controls, unit heater and ventilator controls, commercial fan system controls, commercial refrigeration controls, and radiant panel controls. Prerequisites: TR-AHR 107, TR-MA 120B, TR-DD 116.

TR-MECH 112 Welding 0 3 1
Welding demonstrations by the instructor and practice by students in the oxy-acetylene welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding, bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

TR-AHR 117 Gas, Electric and Liquid Heat 4 12 8
The student studies and receives practice in servicing and installing gas burners, electric heating elements and their controls. The applications of various heating devices in liquid heating and their controls are studied. While not a course in steamfitting, the course treats principles of installation of hot water and low pressure steam boilers with their controls, pumps and coils. Prerequisites: TR-MA 120B, TR-PHY 111, TR-AHR 111.

TR-AHR 114 All Weather Systems 2 3 3
The student receives practical information and experiences in the combination of heating and cooling equipment into integrated systems. The special controls and their sequence of operation are studied in detail. Heat pumps, cycles, absorption cycles and conventional equipment combinations are studied. Prerequisites: TR-AHR 116, TR-AHR 118, TR-MA 120B, TR-PHY 111. Corequisite: TR-AHR 117.

TR-SOC 103 Management Procedures 3 0 3
An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

TR-ENG 102 Shop Communications 2 0 2
Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

TR-AHR 115 Estimating 4 0 4
Time and material take-offs of duct work and distribution systems, actual cost analysis, and profit percentage markups are stressed. Equipment costs and markups for refrigeration and all-weather systems are studied for new installations, replacements, and repairs to systems. Operational cost estimates are also a part of the course covered. Prerequisites: TR-AHR 117, TR-MA 123A. Corequisites: TR-AHR 111, TR-AHR 116, TR-AHR 118.

MACHINIST

The machinist is a key man in all American industry engaged in manufacturing. The services of this highly-skilled craftsman are much in demand and the industrial development of any city depends upon an ample supply of these trained people. Although the machine operator is an entry job for many people, the skilled machinist must possess along with an all-around skill on all machines, a wide knowledge of shop practices and the working properties of various metals to turn a common piece of metal into an intricate part meeting precise specifications.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Community College offers an opportunity for young men to gain the skill and knowledge needed to obtain an entry job in this interesting and rewarding occupation. By working on the job to gain experience beyond that learned in school, the ambitious person will find unlimited opportunities for advancement in this highly-skilled field of employment. Well-qualified instructors and excellent shop equipment can make this program a gateway to a very respected occupation.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week		Quarter Hours
FIRST QUARTER			Class	Shop	Credit
TR-MECH	121	Machine Shop Theory and Practice	4	12	8
TR-MA	120A	Shop Mathematics	3	0	3
TR-DD	122A	Blueprint Reading	3	0	3
TR-PHY	110	Shop Science I: Matter and Electricity	2	2	3
TR-SOC	101	Human Relations	2	0	2
TR-ENG	101	Speed Reading	2	0	0
			16	14	19
SECOND QUARTER					
TR-MECH	122	Machine Shop Theory and Practice	4	12	8
TR-MA	120B	Shop Mathematics	3	0	3
TR-DD	122B	Blueprint Reading	3	0	3
TR-PHY	111	Shop Science II: Mechanics and Heat	2	2	3
TR-MECH	124	Structure of Metals	3	2	4
			15	16	21

Course Title			Course Hours Per Week		Quarter Hours
THIRD QUARTER			Class	Shop	Credit
TR-MECH	123	Machine Shop Theory and Practice	4	12	8
P-MA	801	Geometry and Right Triangle Trigonometry	5	0	5
TR-DD	123A	Blueprint Reading	3	0	3
TR-MECH	112	Welding	0	3	1
TR-MECH	126	Heat Treating Practice	0	3	1
			12	18	18
FOURTH QUARTER					
TR-MECH	125	Machine Shop Theory and Practice	4	15	9
TR-MA	123	Machinist Mathematics	3	0	3
TR-DD	123B	Blueprint Reading	3	0	3
TR-ENG	102	Shop Communications	2	0	2
TR-SOC	103	Management Procedures	3	0	3
			15	15	20

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week		Quarter Hours
	Class	Shop	Credit
TR-MECH 121 Machine Shop Theory and Practice	4	12	8

An introduction to the machinist trade and the potential it holds for the craftsman. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill, press, grinding (off-hand) and milling machines will be introduced both in theory and practice

TR-MA 120A Shop Mathematics	3	0	3

Number theory, operations with common fractions and applications, operations with decimal fractions with applications, simple word problems involving fractions, determination of unknown dimensions on mechanical drawings. Also operations with signed numbers, definitions in algebra, grouping symbols, order of operations, axioms used in solving equations, solution of simple first degree equations, evaluation of a formula, ratio and proportion, compound ratios, tapers and percentage. Solution of simple second degree equations by formula.

TR-DD 122A Blueprint Reading	3	0	3

First part of interpretation and reading of blueprints. Information on the basic principles of the blueprint, lines, views, dimensioning procedures and notes.

TR-PHY 110 Shop Science I — Matter and Electricity	2	2	3

Introductory course in physics and its applications. Covers systems of measurement and properties of solids, liquids and gases. Much emphasis is placed upon the principles of electricity such as electron theory, magnetism, electromagnetism. The production, transmission, distribution, measurement and specific applications of electrical energy constitute major areas of study.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

TR-ENG 101 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-MECH 122 Machine Shop Theory and Practice 4 12 8

Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine and shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: TR-MECH 121.

TR-MA 120B Shop Mathematics 3 0 3

Operations with monomials and polynomials, removing a common factor, more advanced analysis of a formula, solution of a formula for an indicated unknown and evaluation of the unknown. Includes an introduction to geometry and definitions. Instructor demonstrates and explains by examples about 40 selected propositions in geometry, with emphasis on applications of the propositions to problem solving on mechanical drawings. Formulas for areas of plane figures, surface areas of solids, and volumes of solids are developed with applications to problem solving.

TR-DD 122B Blueprint Reading 3 0 3

Second part of interpretation and reading of blueprints. Information on the basic principles of the blueprint, lines, views, dimensioning procedures and notes. Prerequisite: TR-DD 122A.

TR-PHY 111 Shop Science II: Mechanics and Heat 2 2 3

Principles of force, motion, work, energy, power, and mechanisms' mechanical advantage are treated extensively. The study of heat production, transmission, and its conversion into work are covered. Heat removal (refrigeration) is also introduced. Prerequisite: TR-PHY 110.

TR-MECH 124 Structure of Metals 3 2 4

Structure of metals as applied in heat treating demonstrations and lab analysis using elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

TR-MECH 123 Machine Shop Theory and Practice 4 12 8

Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: TR-MECH 122.

Machinist

P-MA 801 Geometry and Right Triangle Trigonometry 5 0 5

Logarithms are taught as a computational aid. Review of more important propositions in geometry. Theory of right triangle trigonometry. Application of right triangle trigonometry to the solution of mechanical drawing problems.

TR-DD 123A Blueprint Reading 3 0 3

First part of practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: TR-DD 122B.

TR-MECH 112 Welding 0 3 1

Welding demonstrations by the instructor and practice by students in the oxyacetylene welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding, bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

TR-MECH 126 Heat Treating Practice 0 3 1

Working knowledge of the methods of treating ferrous and nonferrous metals. The effects of hardening, tempering, and annealing upon the structure and physical properties of metals. Trainees will be given the opportunity to acquaint themselves with the equipment and processes of heat treating. Prerequisite: TR-MECH 124.

TR-MECH 125 Machine Shop Theory and Practice 4 15 9

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: TR-MECH 123.

TR-MA 123 Machinist Mathematics 3 0 3

Theory of oblique triangle trigonometry. Solution of problems involving oblique triangles by 1) reduction to right triangles; 2) sine law; 3) cosine law; 4) cotangent law. Application of these procedures to the solution of problems on mechanical drawings. Prerequisite: P-MA 801.

TR-DD 123B Blueprint Reading 3 0 3

Further practice in interpretation of blueprints as they are used in industry; a study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: TR-DD 123A.

TR-ENG 102 Shop Communications 2 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

TR-SOC 103 Management Procedures 3 0 3

An introduction to the business world, problems of small business operations, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

PRACTICAL NURSING

Who is a Practical Nurse? In one year you can become a Licensed Practical Nurse. Now, more than ever before, you can realize your ambition. Many women find the satisfaction they seek in the practical nursing field. Members of this rapidly developing occupation are serving in hospitals, homes, physicians' offices, nurseries and industry—an important part of the nursing field. Theirs is a future ever widening with opportunity.

You will have the satisfaction of being needed, of helping the young to grow strong, the sick to grow healthy, the well to stay well, the chronically ill and the elderly to live to their fullest capacity.

The practical nurse has an assured place on the health team. Aside from nursing care she serves the convalescing patient and others with chronic or handicapped conditions, and assists the professional nurse with more acutely ill patients.

DESCRIPTION OF PROGRAM

The first quarter of study at Central Piedmont Community College is devoted to classroom lecture and practice. The subsequent three quarters include both classroom and supervised hospital practice in the following areas: medical and surgical nursing; care of mothers and infants; care of children; and care of chronic, aged, and convalescing patients.

Completion of the accredited program will qualify the person to take the North Carolina Board of Nursing licensing examination.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			Course Hours Per Week			Quarter Hours
FIRST QUARTER			Class	Lab.	Clinic	Credit
TR-PN	101	Practical Nursing I	21	8	3	26
		Nursing	7	2	3	9
		Health	4	2	0	5
		Basic Sciences	4	2	0	5
		Vocational Adjustment	2	0	0	2
		Communications and Human Relations	4	2	0	5

Practical Nursing

Course Title	Course Hours Per Week			Quarter Hrs. Credit
	Class	Lab.	Clinic	
SECOND QUARTER				
TR-PN 102 Practical Nursing II	9	8	15	18
Introduction to Medical-Surgical Nursing	5	4	3	8
Introduction to Maternity and Child Care	2	2	9	6
Administration of Oral Medications	1	2	3	3
Communications and Human Relations	1	0	0	1
THIRD QUARTER				
TR-PN 103 Practical Nursing III	7	6	24	18
Medical-Surgical Nursing Care of the Mildly Ill	3	2	9	7
Maternity Nursing	1	2	3	3
Nursing Care of Children	2	2	12	7
Communications and Human Relations	1	0	0	1
FOURTH QUARTER				
TR-PN 104 Practical Nursing IV	8	4	24	18
Medical-Surgical Nursing Care of the Seriously Ill	4	0	18	10
Emergency and Disaster Nursing	1	2	0	2
Vocational Adjustment	2	0	3	3
Drug Administration (Parenteral)	1	2	3	3

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week			Quarter Hrs. Credit
	Class	Lab.	Clinic	
TR-PN 101 Practical Nursing I	21	8	3	26

This course is designed to offer the beginning practical nursing student the opportunity to acquire basic knowledge and understanding from nursing and related areas of learning about health, and to begin to develop the skills needed for safe and effective bedside care of patients whose health deviation has created a state of dependency in matters of daily living. Classroom activities are planned to assist students in development of knowledge, understanding, appreciation, and attitudes basic to effective nursing of patients of all ages and backgrounds with nursing needs arising both from the individuality of the patient and from inability for self-care as a reseult of a health deviation. The student is encouraged to develop beginning skills in analysis of patient needs, both through classroom study of hypothetical patient situations and through planned patient experiences in the clinical environment. Beginning skills in nursing methods are developed through planned laboratory experiences, followed by related practice in actual patient care.

TR-PN 102 Practical Nursing II 9 8 15 18

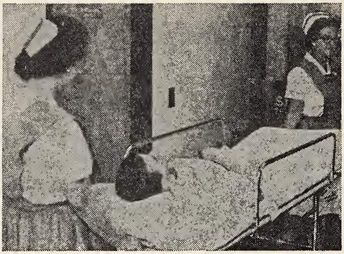
This course is designed to provide opportunities for the student practical nurse to acquire further knowledge, understanding and skills needed for rendering safe and effective nursing care to patients of all ages. Classroom activities center around analysis of nursing needs as viewed in perspective with the needs arising from the individuality of the patient and from the illness condition, and in formulating a nursing care plan that will best meet the needs of the individual patient, maternity patient and newborn infant. Clinical activities provide experiences in the care of selected maternity patients, newborn infants, and patients with disorders studied in the classroom. Prerequisite: TR-PN 101.

TR-PN 103 Practical Nursing III 7 6 24 18

This course is designed to offer the practical nursing student opportunities to acquire knowledge and understanding of selected diseases affecting body systems and nursing needs resulting from these diseases. Classroom activities are designed to assist the student in learning to recognize the effects of specific illnesses on nursing needs, to gain general understanding of commonalities of nursing needs for patients with similar conditions, and to develop further understanding of common drugs and therapeutic measures of concern to the practical nurse. Clinical activities provide experience in care of selected patients with disorders studied in the classroom, requiring nursing measures for alleviation of symptoms, treatment and rehabilitation. Patients selected for clinical experiences include adults and children with specific conditions and diseases. Prerequisite: TR-PN 102.

TR-PN 104 Practical Nursing IV 8 4 24 18

This course is designed to prepare the advanced practical nursing student for participation in the care of seriously ill patients, for development of further skill in the care of selected patients of all ages, and for making the transition from student to graduate practical nurse. Classroom activities are designed to assist the student in learning about needs of seriously ill patients, nursing aspects of community disaster, principles related to complex nursing actions, and vocational adjustments related to practical nursing. Clinical activities provide experience in the case of selected patients, participation in diagnostic procedures, and performance of therapeutic assignments. The student progressively will assume a closer working relationship with hospital staff members, and participate more fully in activities related to patient care. Prerequisite: TR-PN 103.



WELDING

Do you want to travel, see the world and make good money at the same time? Skilled welders work on bridges, buildings, dams and other construction projects around the globe. A well-trained welder can travel if he wishes; then he can come back and take a job or obtain one of the many jobs now available in Charlotte for a skilled man.

Many of the parts used in missiles, automobiles, airplanes, refrigerators, and thousands of other products are joined by a widely-used process known as welding. Welders join metals by applying intense heat and sometimes pressure to melt the edges to form a permanent bond. Of the more than thirty-five different ways of welding metals, electric arc, oxyacetylene, and resistance welding are the three most important.

DESCRIPTION OF PROGRAM

The program at Central Piedmont Community College provides the opportunity for students to develop the skills necessary in the operation of a variety of types of welding equipment. Other courses such as metals, shop math, and blueprint reading play important parts in developing a first-class welder.

SUGGESTED SEQUENCE OF REQUIRED COURSES

Course Title			**Course Hours Per Week**		**Quarter Hrs.**
FIRST QUARTER			**Class**	**Shop**	**Credit**
TR-WELD	120	Oxyacetylene Welding and Cutting	3	12	7
TR-MA	120A	Shop Mathematics	3	0	3
TR-MECH	124	Structure of Metals	3	2	4
TR-DD	122A	Blueprint Reading	3	0	3
TR-PHY	110	Shop Science I: Matter and Electricity	2	2	3
			14	16	20
SECOND QUARTER					
TR-ENG	101	Speed Reading	2	0	0
TR-WELD	111	Electric Arc Welding	3	12	7
TR-DD	122B	Blueprint Reading	3	0	3
TR-PHY	111	Shop Science II: Mechanics and Heat	2	2	3
TR-MA	120B	Shop Mathematics	3	0	3
TR-SOC	101	Human Relations	2	0	2
			15	14	18

Welding

Course Title		Course Hours Per Week Class	 Shop	Quarter Hrs. Credit
THIRD QUARTER				
TR-WELD 114	Introduction to Pipe Welding	3	12	7
TR-WELD 113	Inert Gas Welding	1	3	2
TR-WELD 112	Mechanical Testing and Inspection	2	4	4
TR-SOC 103	Management Procedures	3	0	3
		9	19	16

COURSE DESCRIPTIONS

Course Title	Course Hours Per Week Class	 Shop	Quarter Hrs. Credit
TR-WELD 120 Oxyacetylene Welding and Cutting	3	12	7

Introduction to Oxyacetylene Welding and Electric Arc Welding, the principles of welding and cutting, nomenclature of the equipment, assembly of unit. Welding procedures such as practice of puddling and carrying the puddle, running flat beads, butt welding in the flat, vertical and overhead position, brazing, hard and soft soldering. Safety procedures are stressed throughout the program of instruction.

TR-MA 120A Shop Mathematics 3 0 3

Number theory, operations with common fractions and applications, operations with decimal fractions with applications, simple word problems involving fractions, determination of unknown dimensions on mechanical drawings. Also operations with signed numbers, definitions in algebra, grouping symbols, order of operations, axioms used in solving equations, solution of simple first degree equations, evaluation of a formula, ratio and proportion, compound ratios, tapers, and percentage. Solution of simple second degree equations by formula.

TR-MECH 124 Structure of Metals 3 2 4

Structure of metals as applied in heat treating demonstrations and lab analysis using elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

TR-DD 122A Blueprint Reading 3 0 3

First part of interpretation and reading of blueprints. Information on the basic principles of the blueprint, lines, views, dimensioning procedures and notes.

TR-PHY 110 Shop Science I: Matter and Electricity 2 2 3

Introductory course in physics and its applications. Covers systems of measurement and properties of solids, liquids and gases. Much emphasis is placed upon the principles of electricity such as electron theory, magnetism and electromagnetism; the production, transmission, distribution, measurement and specific applications of electrical energy constitute major areas of study.

TR-ENG 101 Speed Reading 2 0 0

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

TR-WELD 111 Electric Arc Welding 3 12 7

A continuation of Electric Arc Welding. This course in Arc Welding will provide the finer points: welding heats, electrodes, type welds on stainless steel, aluminum, etc. Inert Gas Welding is introduced. Prerequisite: TR-WELD 120.

TR-DD 122B Blueprint Reading 3 0 3

Second part of interpretation and reading of blueprints. Information on the basic principles of the blueprint, lines, views, dimensioning procedures and notes. Prerequisite: TR-DD 122A.

TR-PHY 111 Shop Science II: Mechanics and Heat 2 2 3

Principles of force, motion, work, energy, power, and mechanisms' mechanical advantage are treated extensively. The study of heat production, transmission, and heat conversion into work are covered. Heat removal (refrigeration) is also introduced. Prerequisite: TR-PHY 110.

TR-MA 120B Shop Mathematics 3 0 3

Operations with monomials and polynomials, removing a common factor, more advanced analysis of a formula, solution of a formula for an indicated unknown and evaluation of the unknown. Includes an introduction to geometry and definitions. Instructor demonstrates and explains by example about 40 selected propositions in geometry, with emphasis on applications of the propositions to problem solving on mechanical drawings. Formulas for areas of plane figures, surface areas of solids, and volumes of solids are developed with applications to problem solving. Prerequisite: TR-MA 120A.

TR-SOC 101 Human Relations 2 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

TR-WELD 114 Introduction to Pipe Welding 3 12 7

Designed to provide practice in the welding of pressure piping in the horizontal, vertical and horizontal fixed positions using shielded metal arc welding processes according to Section IX of the ASME code. Prerequisite: TR-WELD 111.

TR-WELD 113 Inert Gas Welding 1 3 2

Further operations in the use of Inert-Gas-Shield Arc Welding. Specialized welding operations such as Metal Inert Gas. Submerged Arc, Core Wire and Automatic Welding will be studied. Prerequisite: TR-WELD 111.

TR-WELD 112 Mechanical Testing and Inspection 2 4 4

The standard methods for merchanical testing of welds. The student is introduced to the various types of tests and testing procedures and performs the details of the test which will give adequate information as to the quality of the weld. Types of tests to be covered are: bend, destructive, free-bend, guided-bend, nick-tear, notched-bend, tee-bend, nondestructive, V-notch, Charpy impact, etc. Prerequite: TR-WELD 111.

TR-SOC 103 Management Procedures 3 0 3

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

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